THE IRON TRADE REVIEW

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LARGER ADVANCE

IN ORE PRICES FOR 1907 NOW SEEMS ASSURED.

Scarcity of Pig Iron and Cars Forces Plants to Close.—New Capacity In Prospect.

It now seems practically certain that there will be an advance of 75 cents per ton on Bessemer ores and 50 cents on non-Bessemer for the year beginning May 1, 1907. Until within the last few days, it was supposed that the advance would not exceed 50 cents on Bessemer and 25 cents on non-Bessemer, but sales have already been made by one producer on the higher basis, and other interests are likely to pursue the same policy, although with much reluctance. Figuring two tons of ore to a ton of pig iron, the advance means that the cost of steel-making iron will increase $1.50, and of other grades $1.00 per ton. The advanced cost of coke will also add from 50 cents to $1.00 to the cost of manufacturing iron. The beginning of the active ore buying movement, which will be largely an apportionment of available ores, is expected within a short time.

Iron Imports Are Beginning. The pig iron market has passed out of the hands of the producer into the control of the melter, with whom price has become a small consideration. Quotations are very irregular, spot, first quarter and second quarter iron all selling at different figures. The fact that practically the entire prospective make has been acquired by consumers, and that little is in the hands of speculators, reduces the danger of a runaway market to the minimum. Imports of iron are increasing, the recent engagement of some 40,000 tons abroad being noted. Work has begun on a new furnace in the Buffalo district, another is anonunced for the vicinity of Chicago, and there is the probability of two being erected near Ironton, Ohio.

Car Famine More Acute. To the difficulties of the pig iron famine, steadily growing more acute, has been added another perplexing feature in the increasing scarcity of cars, due chiefly to the heavy demands of the crop movement. The closing down of a number of plants has already been forced, and others are leading a hand-to-mouth existence. At the same time, certain furnaces, unable to secure cars, are piling up considerable tonnages of iron in their yards. In the Pittsburg district the shortage has affected finishing plants as well, and there is a prospect that some will have to close, as their storage facilities are becoming exhausted.

Little Gain in Coke Output. The announcement that there are now only five more active ovens in the Connellsville region than there were a year ago is not comforting for coke consumers. The H. C. Frick Coke Co. has continued buying all through the week, its purchases now aggregating some 600,000 tons, or 50,000 tons monthly through 1907. Large independent furnace interests whose requirements for the year had been fairly well covered, have been excited into activity, and have entered the market to complete their purchases.

Will Enlarge Steel Capacity. In connection with the scarcity of crude steel, the announcement is made by the Inland Steel Co. that it will add two 50-ton open-hearth furnaces and a bar mill. Billets are selling in the Chicago district for next year's delivery, and some German importations are offered at $35.00. Premiums of $2.00 to $3.00 are procurable for prompt delivery of billets, steel bars and the heavier grades of plates. The leading interest has advanced the price of spikes.

EXTENSIONS

TO BE MADE BY INLAND STEEL COMPANY.

New Blast Furnace and Two Open-Hearth Furnaces to be Added.

Chicago, Oct. 24.—The Inland Steel Co., Chicago, has decided to proceed at once with the construction of the extensions of its Indiana Harbor plant which were authorized at the meeting of the board of directors held last summer. Only one blast furnace will be built at the present time and this will be of 400 tons capacity. W. B. Pollock & Co., Youngstown, Ohio, has the contract for the erection of this stack, and the blowing engine contract has been awarded to the Allis-Chalmers Co., Milwaukee. The erection of the second furnace will depend largely upon the condition of the market at the completion of the first stack. Hoover & Mason, Chicago, have received the contract for the ore-unloading appliances. Two additional 50-ton open-hearth furnaces will also be built upon the completion of the sixth furnace now under construction at Indiana Harbor. This is expected to be in operation about the first of the year and the new furnaces are planned to be completed by July 1 next.

DETAILS OF NEW YORK STATE ORE DEAL.

Duluth, Minn., Oct. 24.—The terms of the deal whereby the New York State Steel Co. leased a tract of ore lands from the Tesora Mining Co. provide for a royalty of $1 per ton, and it is arranged that an advance royalty of $200,000 must be paid. The steel company is to explore the land and estimate on the ore body, subject to the approval of the Tesora Co. It is provided that a minimum of 100,000 tons shall be taken out annually during the first five years, after which time one-fifteenth of the remainder of the deposit is to be mined each year. The lease runs for 20 years. Only one forty is owned by the Fay Yawkey interests. The average grade of ore is 63 per cent iron and 0.035 per cent phosphorus, and the physical structure is excellent.

THE WEEK IN IRON CENTERS.

PITTSBURG.

Shortage of Pig Iron and Cars More Acute.—More Coke Buying.

Office of THE IRON TRADE REVIEW, 521 PARK BUILDING, Oct. 24.

The shortage of cars, with the consequent inability to make shipments, is the most important problem in the iron and steel business at the present time, overshadowing the pig iron situation which has been acute for the past two months and is growing worse as each week passes. There has been considerable talk of a runaway market as far as pig metal is concerned, but this term is a misnomer inasmuch as there is practically no pig iron to be sold. If the immense amount sold during the past two months, covering as it does nearly the entire estimated output of merchant furnaces through the first half of next year, had gone into the hands of speculators, there might be some grounds for "runaway" talk, but the facts are that the pig iron was purchased by actual consumers for their requirements and the tonnage in the hands of brokers or middlemen is so small that there is no cause for apprehension from that quarter.

No improvement in the car situation is looked for until after the end of the lake season, the principal cause of the shortage being attributed to the demands of the coal trade for lake shipment and the efforts being made from the lake end to ship ore to Pittsburg and the valleys. While the time is yet considerably distant even under existing conditions when mill production will have to be curtailed on account of inability to ship the products, many concerns are already anticipating the prospects.

Outside of the car shortage and the pig iron market the coke trade is attracting a great deal of attention. The transactions of the Frick Coke Co., in buying large tonnages for delivery throughout next year, have continued through the past week, although not on as large a scale as the week previous. The Frick Coke Co. is taking all the coke it can secure at prices averaging $3, and it is estimated that the tonnage already contracted for will in the aggregate amount to over 50,000 tons a month through the whole of 1907. No intimation as to the reason for this extraordinary move has been given, but it has caused independent consumers to look sharp for their supply and has made producers in the region do some very tall guessing.

Pig Iron.—The offerings of northern grades of pig metal have been extremely light and it is next to impossible to line up a market quotation, as at best it would be purely nominal and with no sales of sufficient tonnage to make a market price. With the extreme scarcity of all grades of northern iron for deliveries before the middle of next year, considerable southern iron has found its way into this market and we note the sale of 1,500 tons of southern No. 2 foundry in two lots at between $17 and $17.25, Birmingham. The nominal market for northern No. 2 is between $22 and $22.50 valley for the remainder of the year, and $19.50 to $20 for the first half of next year. The leading consumers are running very close on their steel-making iron, and at one plant last week two Bessemer converters were shut down two days on account of an inadequate supply of iron. A feeling of uncertainty as to the price of ore for 1907 has added another note of uneasiness to the situation. On first half delivery we quote as follows, although quotations are to a very great extent purely nominal, on account of the small amount of pig iron in the market:

Bessemer Valley	21.00 to 21.25
Bessemer, Pittsburg	21.85 to 22.10
No. 1 Foundry, Pittsburg	21.35 to 21.60
No. 2 Foundry, Pittsburg	20.35 to 20.85
Gray Forge, Pittsburg	19.85 to 20.10
Basic, Valley	20.75 to 21.00
Basic, Pittsburg	21.60 to 21.50

Ferro-Manganese.—On the good grades of imported 80 per cent ferromanganese we quote $77 Pittsburg for delivery December, or first quarter of next year, and $80 to $81 for prompt delivery. Ferro-silicon, 50 per cent, for the remainder of the year is quoted $97 and 12 per cent $32.50 to $33.

Steel.—With one producer of semi-finished material entirely out of the market for the remainder of the year, and two other large ones with absolutely nothing to offer, having all they can do to take care of pressing contracts and supply their own finishing mills, the situation as far as any nearby improvement is concerned has not changed for several weeks past, and quotations of $28 to $29 on Bessemer billets and $29 to $30 on open-hearth are nominal. There is no steel to be had at these prices, although it is probable that an offer of $30 or $31 would bring out some steel notwithstanding the exceedingly narrow margin this would leave for the finisher at the ruling prices of finished products.

Skelp.—The advance in pipe noted last week has not as yet had any noticeable effect on the skelp market, although it was thought that with the advance independent makers would be more willing to take business farther ahead than they were inclined to do before the advance. The following nominal market is quoted on narrow widths and light gauges:

Bessemer, grooved, 1.62½c to 1.67½c; sheared, 1.67½c to 1.72½c; basic, grooved, 1.65c to 1.70c; sheared, 1.70c to 1.75c; iron skelp, grooved, 1.80c to 1.85c; sheared, 1.90c to 2c.

Muck Bar.—The market is quiet and there is but little material available. We quote all pig muck bar $32 to $33, Pittsburg, and scrap bar $29 to $30.

Merchant Bars.—There has been a steady, firm market, with good demand for both iron and steel bars, the two leading producers in this district for steel bars still adhering to the 1.50c base, while others are quoting 1.60c Pittsburg. One producer is out of the market until Jan. 1, at least. On iron bars 1.65c to 1.70c is quoted on carload lots, and western mills are quoting on the 1.60c Pittsburg base. We quote:

Common iron bars, 1.60c, Pittsburg, in carload lots, 1.65c in less than carloads; Bessemer steel bars, 1.50c; plow and cultivator, 1.50c net; channels, angles, zees and tees, under three inches, 1.60c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds, of a size, 0.30c advance.

Wire and Wire Nails.—The demand for plain and barb wire fencing and wire nails is very strong and mills are several weeks behind on deliveries. The car shortage has been a serious handicap in this trade. We quote:

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.90, and less than carload lots, $2; painted barb wire, $2 for jobbers in carloads; retailers in carloads, $2.05, and less than carloads, $2.15, with 30c for galvanizing; plain wire, $1.70 to jobbers and $1.75 by carload.

Merchant Steel.—The demand for steel shafting is very heavy and consumers are pressing producers for deliveries. In some instances premiums are asked on deliveries but the leading interests have declined to take on premium business. The market is very active. We quote:

Cold rolled and ground shafting, 50 per cent off in carload lots, and 45 off in less than carloads, delivered in base territory; tire steel, 1.70c to 1.80c; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flat, 1.50c to 1.55c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.05c to 2.10c. The price of planished and machine straightened tire is 1.70c base half extras as below. Iron finished tire up to 1½ inch by ½ inch, 1.65c base half extra tire list. Iron finished tire 1½ inch by ½ inch and over to be sold on regular bar

basis of 1.50c base, half extra steel card.

Merchant Pipe.—The pipe business is in excellent shape and there is no deviation from the advance that went into effect October 13, made necessary by the fact that mills were booking business so far ahead that order books were practically getting away from them. During the past week the Pure Oil Co., of Pittsburg, one of the Jennings' interests, purchased 250 miles of six-inch line pipe to be laid from Pine Grove, W. Va., to Marcus Hook, below Philadelphia. The purchase was made through the National Supply Co. We quote the following official discounts, consumers' carloads; with jobbers' discounts one point lower, the extreme discount being 79 and 5 off:

	Steel		Iron	
Consumer's Carloads	Black	Galv.	Black	Galv
⅛ and ¼ inch	60	53	65½	49½
⅜ inch	71	57	67½	53½
½ inch	73	61	69½	57½
¾ to 6 inches	77	67	74	64
7 to 12 inches	72	57	69	53½
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch	62	50	58½	46½
½ to 4 inches	69	57	65½	53½
4½ to 8 inches	65	53	61½	49½
Double extra strong plain ends, ½ to 8 inches	58	47	54½	43½

Sheets.—The regular mill prices have not changed and promises of shipment average about ten weeks on the regular lines. All mills for which it is possible to secure steel are in operation but the steel supply is as bad as it has been at any time this season. We quote:

Black steel sheets, box annealed, cold rolled, one pass: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.65c; No. 30, 2.75c. Galvanized, Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.80c; No. 30, 4.05c. Corrugated roofing, $1.75 per square for No. 28 painted 2½-inch corrugation. $3.10 per square for No. 26 galvanized, 2½-inch corrugation. Quotations f. o. b. Pittsburg on large lots.

Plates.—The demand for plates, while it is heavy, it is not in excess of shipments and the condition of most of the mills is very satisfactory. The car companies have about specified for their requirements against existing contracts up to the first of the year, and have covered for material after that period on car contracts already taken for next year delivery. While the leading interest is not in position to accept further business for delivery during the remainder of the year, other mills are not so badly crowded and are still taking on business. We quote:

Tank plate ¼-inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill, Pittsburg. Light plate schedule, No. 10, 1.70c; Nos. 11-12, 1.75c; Nos. 13-14, 1.80c; Nos. 15-16, 1.90c. Extras on the regular plate schedule are as follows per 100 pounds, boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates, varying not more than four inches in width at ends, narrowest end not being less than 30 inches, 0.10c; complete circles 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gauges under ¼-inch to and including 3-16-inch plates on thin edges, 0.10c; under 3-16 inch to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Tin Plate.—The car shortage, which at this time is extremely tantalizing in all branches of the business, is being much felt in this line and has held up deliveries that ordinarily would have been made. The canning consumption of tin plate is practically over for this year but an enormous amount of business is being taken by all interests. Steel shortage is a big drawback to full operation of all plants. Premiums, guaranteed against decline, are asked for second quarter deliveries. We quote mill prices unchanged as follows:

Coke tin plates, 100-pound basis, 14 x 20, $3.75, f. o. b. mill Pittsburg district; terms 30 days, less two per cent for cash in 10 days.

Structural Material.—Mills are turning out a big production of shapes and a considerable amount of new business is being booked, but the trade is not as active as it was a short time ago and better deliveries are promised, the pressure having to some extent lessened and the range of rollings is made within from six to eight weeks. We quote:

Beams and channels, 15-inch and under, 1.70c; over 15 in., 1.80c; zees, 1.70c; tees, 1.75c; angles from three to six inches, inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Rail and Track Material.—During the past week the leading interest accepted contracts for approximately 35,000 tons of standard sections and a large tonnage of light rails. Business now on the books will about fill capacity for light rails for the next six months and for standard sections the mills are booked ahead for practically the first half of next year. This, of course, includes the business that will be carried over from this year. The spike market is extremely strong and $2.50 is now the market, while still higher prices are being asked and in many instances obtained for very forward delivery. We quote:

Rails 50 pounds and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails, 16 pounds, $32; 20 pounds, $33; 25 pounds to 45 pounds, $31 to $32; angle bars for standard sections, 1.50c; spikes $2.50 to $2.75.

Hoops and Bands.—The hoop market is very strong. Great pressure is being brought upon mills to make deliveries and it would not be at all surprising to see an advance in price within the next two or three weeks. Specifications and new business is exceeding shipments at the present by about 25 per cent. We quote as follows:

Hoops, 1.90c in carload lots, and 2c on less than carload lots; bands, 1.50c base, half extras as per standard steel card. Prices f. o. b. Pittsburg.

Old Material.—The market is firm and scrap is coming out freely and as freely being taken by dealers. There has been a fairly good demand for foundry and rolling mill scrap and several negotiations of good tonnages are pending. We quote:

Heavy melting scrap, $16.50 to $17.00; rerolling rails, $19.00 to $19.50; bundled sheet scrap, $14.75 to $15.25; iron car axles, $28.50 to $29.00; old car wheels, $20.50 to $21.00; old iron rails, $23.50 to $24.00; low phosphorus scrap, $22.00 to $22.50; No. 1 wrought scrap, $19.50 to $19.75; machine shop turnings, $13.00 to $13.25; axle turnings, $13.50 to $13.75; cast borings, $10.25 to $10.50; No. 1 cast scrap, $17.00 to $17.50.

Coke.—The fact that the Frick Coke Co., the largest producer in the region, has during the past two weeks been an active buyer of outside coke, the total purchases aggregating nearly 600,000 tons, or about 50,000 tons a month for the whole of 1907, has set independent producers on edge and put them to guessing very strongly without arriving at any satisfactory conclusion as to the reason. These purchases have been heavier for the first six months of 1907 than for the last half of the year, but the buying has not stopped and the leading coke interest has sounded practically every independent producer in the region

and endeavored to close for the output. It can not be figured out that the consumption of the steel corporation, which has been taking all the Frick coke, has increased to the extent of the late purchases, and these have been in excess of what natural Frick shortages would be in case of car shortages or labor troubles. Pennsylvania Steel, Lackawanna, Cambria and other consumers, while they have covered for the greater part of their requirements, have become active since the late buying movement and are protecting themselves to the limit of their estimated needs. A large part of the merchant furnaces contracted around $2.85, but the recent Frick purchases have been around $3. We quote the good grades of furnace coke for spot shipment $2.90 to $3, and for the first six months of next year $3. For the whole of 1907 $2.85 is quoted. On 72-hour foundry coke we quote $3.75 to $3.85, ovens.

The *Courier's* detailed report of the operation and output of the Connellsville region for the week ending on Saturday, Oct. 13, shows a total of 23,358 ovens, of which 20,879 were active and 1,479 were idle. The total estimated production was 280,832 tons, a small gain compared with the production of the previous week. There were no changes reported in the active and idle lists of ovens.

In the lower Connellsville region there are 8,933 ovens, of which 8,743 were active and 190 were idle. The total estimated production was 111,839 tons, a gain of 1,000 tons over the production of the week before.

CHICAGO.

Iron and Steel, Urgently Needed, Now Accumulating in Yards.

Office of THE IRON TRADE REVIEW, 1362 Monadnock Block, Oct. 24

Lack of cars as a result of crop moving operations in the north and south has developed another critical condition in iron and steel. The shortage is very acute, and iron and steel most urgently needed is accumulating in shippers' yards. The outlook is very serious, and with no relief possible for several months, an alarming congestion of freight is expected with the first fall of snow. The delay to deliveries of pig iron which the car shortage has already occasioned has resulted in further advances in prices. Spot iron is the center of attraction, and this is increasing in value daily. At the present time southern No. 2 is held at $19 to $19.50 Birmingham, and northern No. 2, $24 Chicago. Large transactions are rare, but there is an insatiate demand for filling-in lots. In finished material, ship builders and railroads were the principal factors in the week under review. Thirty thousand tons of plates and structural shapes have been ordered by the American Ship Building Co. for new vessel construction, of which 9,000 tons went to the Illinois Steel Co., and an aggregate of nearly 15,000 tons of the same materials has been placed or is pending for maintenance of way improvements. Of this tonnage, the Northern Pacific inquiry for 7,000 to 8,000 tons, which is still pending, is the largest individual transaction.

The congestion of specifications for steel bars and the serious shortage of crude steel adds interest to the announcement of the Inland Steel Co., of this city, that it will build two additional 50-ton open-hearth furnaces at its Indiana Harbor plant upon the completion of the sixth furnace now under construction there, together with a bar mill to roll down to ⅜ rounds. The company has also decided to proceed with the construction of the first of the two blast furnaces which it will also erect at this place, and contracts for a 400-ton stack have been let.

The market is extremely firm on all finished products, local jobbers contemplating further advances in sheets and steel bars. The demand for sheared plates is especially heavy, and the steel corporation is practically out of the market on this product. Scrap and coke are also stronger in tone.

Pig Iron.—The market has passed absolutely beyond the control of sellers, and is entirely in the hands of melters. So eager is the demand for iron that price has ceased to be an object. Northern No. 2 foundry for spot shipment is selling at $24, Chicago and southern for the same delivery at $19 to $20 Birmingham. On shipments in the first half, all the furnaces have advanced their prices 50 cents a ton.

No two schedules agree, each producer basing his quotations on his individual conditions. The Sloss-Sheffield Co. is asking $18 Birmingham for No. 2 foundry, for the second quarter, and the Tennessee-Republic interests, $17. For the first quarter alone, the Sloss company has nothing to sell, but will book orders for the entire six months on the basis of $18.50 Birmingham. The Tennessee price for the first quarter is $17.50 Birmingham. Northern furnaces also make a spread of 50 cents a ton between the first and second quarters, $22 being asked for the first three months and $21.50 for the remaining period. Lake Superior charcoal and malleable Bessemer have advanced from 50 cents to $1 a ton, according to delivery; standard Bessemer is almost unobtainable. The growing use of cast scrap as a result of these high prices has developed an increasing demand for high silicon irons, and these are rapidly increasing in value. So tense is the local market that every inquiry must first be submitted to the furnace before it can be closed. Values change in a night, every quotation being subject to immediate acceptance. We have revised our prices, and quote for the first half as follows:

Lake Superior charcoal	$22.00 to 22.50
Northern Foundry No. 1	22.00 to 22.50
Northern Foundry No. 2	21.50 to 22.00
Northern Foundry No. 3	21.00 to 21.50
Northern Scotch Foundry	22.00 to 22.50
Ohio Strong Softeners No. 1	22.80 to 23.30
Ohio Strong Softeners No. 2	22.30 to 22.80
Southern Foundry No. 1	21.40 to 21.90
Southern Foundry No. 2	20.90 to 21.40
Southern Foundry No. 3	20.40 to 20.90
Southern Foundry No. 4	19.90 to 20.40
Southern No. 1 Soft	21.40 to 21.90
Southern No. 2 Soft	20.90 to 21.40
Southern Gray Forge	19.15 to 20.15
Southern Mottled	18.90 to 19.90
Southern Silveries (4 per cent to 6 per cent Silicon	23.40 to 24.40
Jackson Co. Silveries, 8 to 10 per cent Silicon	25.30 to 26.30
Alabama and Georgia Car Wheel	27.15 to 27.65
Malleable Bessemer	22.00 to 22.50
Standard Bessemer	22.80 to 23.80
Basic Iron	20.90 to 21.40

Billets.—The buying of billets for next year's delivery is growing. At present, it is confined to lots ranging below 1,500 tons, but the aggregate volume of sales of this character make up a good sized tonnage. The principal inquiry this week is from a local fabricator and is for 5,000 tons. Quotations on forging billets for the first half range from $34 to $35, but for shipment this year $2 to $3 a ton more is easily obtained. German forging billets are said to have been offered here at $35, but no sales were made. There is a good demand for wire rods, and prices remain firm at $34 Pittsburg. Sales of rolling billets are reported here at $30 Pittsburg.

Iron and Steel Bars.—Strong conditions prevail in the local market. Buying of bar iron is active and large tonnages are under negotiation. Specifications are voluminous and continually to the full capacity of mills. For early delivery the leading makers are holding firmly at 1.60c Pittsburg, but on forward shipments 1.55c can be done. No change is noted in the steel bar situation. Mills are overwhelmed with business. Specifications are heavy and deliveries slow. Sellers in position to give early shipments have no trouble in securing $2 premiums. We quote carload lots, mill shipments, as follows:

Bar iron 1.71½c; soft steel bars and bands, 1.66½c, half extras; soft steel angles, less than 3 x 3, 1.76½c; hoops, 2.06½c base, full extras; old rail

stock, 1.65½c. We quote bar iron from stock, 2.20c, full extras; soft steel rounds and squares, 3 inches and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by 1⅛-inch and larger, $2 per 100 pounds base; 4½ inches x 5 inches and 6 inches x 5-16 inch and thicker, 22 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $1.85 to $1.95 half extras; soft steel hoops, $2.30 to $2.40 full extras. Other sizes not mentioned above, $1.85 per 100 pounds base plus half extras.

Structural Steel.—Owing to the large increase in structural steel capacity this year without a corresponding growth in consumption, it is possible to get early deliveries from nearly all mills. Fabricators are very busy, but the new business taken by them from week to week is not reflected on mill order books inasmuch as all of them have large contracts with the mills. In the week under review, the American Bridge Co. has taken the following contracts: Chicago & Northwestern railway, 975 tons; Duluth & Iron Range R. R., 625 tons; Chicago Junction railway, 600 tons; Calumet & Arizona Mining Co., 125 tons; Rothschild & Co., Chicago, 650 tons, and from the firm of Butler Bros. for their new building in St. Louis, 450 tons of structural castings. We quote, mill prices, as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from that city to Chicago is 16½c per 100 pounds. Quotations from store are as follows:

All angles, three inches and larger, including six inches, $2.05 to $2.10 per 100 pounds; angles over six inches, $2.15 per 100 pounds base; beams, three inches to 15 inches inclusive, $2.05 to $2.10 per 100 pounds base; channels, three inches and larger, $2.05 per 100 pounds base.

Merchant Steel.—Since producers are not actively seeking business, new tonnage continues light. Specifications, however, are to the full capacity of mills. Prices are without change as follows:

Planished or smooth finished tire steel, 1.86½c; iron finish, up to 1½ x ½ inch, 1.81½c; iron finish, 1½ x 1½ inch and larger, 1.66½c, base; channels for solid rubber tires, ¾ to 1 inch, 2.16½c, and 1⅛ inch and larger, 2.06½c; smooth finished machinery steel, 1.91½c; flat sleigh shoe, 1.71½c; concave and convex sleigh shoe, 1.96½c; cutter shoe, 2.35c; toe calk steel, 2.21½c; railway spring, 1.86½c; crucible tool steel, 6½c to 8c, and still higher prices are asked on special grades. Shafting, 50 per cent off in car lots and 45 per cent in less than car lots, in base territory.

Sheets.—There is an active inquiry for sheets, especially of the heavier gauges. Officially, prices are without change, but for early shipments of gauges, 16 and heavier, local makers are able to secure from $2 to $3 a ton above the prevailing schedule. The leading producer is reported sold solidly for the next nine months on the lighter gauges of black ond galvanized sheets. It is making slow progress on its deferred tonnage, six to seven weeks being required on galvanized sheets and four to five weeks on black. Local jobbers are contemplating an advance of $1 a ton in store prices. We quote as follows:

Black sheets, Nos. 8, 9 and 10, 1.85c Pittsburg; No. 28 gauge, 2.50c Pittsburg. Galvanized sheets, No. 28 gauge, 3.55c to 3.60c Pittsburg. Freight to Chicago is 16½c per 100 pounds.

Jobbers' prices on less than carload lots from store are as follows. Black sheets, No. 10, 2.10c to 2.20c; No. 12, 2.15c to 2.25c; No. 14, 2.20c to 2.25c; No. 16, 2.30c to 2.35c; Nos. 18-20, 2.60c to 2.70c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.90c; No. 30, 3.35c to 3.45c. Galvanized sheets, Nos. 10 to 20, 3.15c to 3.25c; Nos. 22 and 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 3.95c; No. 30, 5.10c to 5.15c.

Plates.—The principal transaction of the week was the order from the American Ship Building Co. for 30,000 tons, which went to the Steel Corporation. Of this amount, the local mills have received 9,000 tons as their allotment. All the Corporation interests, with the exception of the South Chicago plant, are practically out of the market on sheared plates. The Illinois Steel Co. has five months' work on its books for this product, and live specifications in hand amounting to ten weeks' output. Independent manufacturers, however, are not so secure, and it is understood that they can make deliveries on either sheared or universal plates within a few weeks from the date of order. Prices are very firm but without change. We quote as follows:

Tank steel, ¼-inch and heavier, up to 100 inches wide, 1.60c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago is 16½c per 100 pounds.

Jobbers' prices for shipment from local stocks are as follows: Tank steel ¼ inch and heavier, up to 72 inches wide, 2c to 2.10c; 72 inches up to 96 inches wide, 2.10c to 2.20c; 3-16 inch up to and including 60 inches wide, 2.10c to 2.20c; 3-16 inch, 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.15c to 2.25c; flange steel, 25c extra; heads, 25c extra.

Rails and Track Supplies.—Contracts for standard sections from this territory include 1,200 tons for the St. Joseph Valley railroad which went to the Cambria Steel Co., 1,400 tons for the Union Traction Co., of Kansas City, and 1,000 tons for the Terre Haute Electric Light & Power Co. There is a good demand for light rails, and the leading western maker has sold considerable tonnage for next year's delivery. Track supplies are firm, and on spikes the leading manufacturer has advanced its prices. We quote as follows:

Bessemer rails, $28 and open-hearth, $29; light rails, Bessemer steel, 30 to 45-pound sections, $31; 25-pound, $32; 20-pound, $33; 16-pound, $34; 12-pound $35, and lighter sections, down to 8-pound, $41.50, all f. o. b. mill.

On contracts for angle bars, spikes and bolts when accompanied by rail orders, the following quotations are in effect: 1.50c to 1.75c for angle bars, 2.10c to 2.25c for spikes, and 2.45c to 2.55c for bolts. On miscellaneous business from the general trade, however, other manufacturers are asking 2.25c to 2.50c Chicago, for spikes, 2.85c for bolts with square nuts, and 3c for bolts with hexagon nuts. Angle bars are held at 2.25c to 2.75c, according to the tonnage and delivery required.

Cast Iron Pipe.—This is the dull season for cast pipe, and naturally the market is quiet. Prices are without change, as follows: Four-inch water pipe, $34; six, eight and ten-inch, $33; 12-inch and larger, $32; gas pipe, $1 a ton higher.

Merchant Pipe.—The $4 advance in black and galvanized steel pipe two weeks ago is well sustained. It has not resulted in any noticeable increase in business, as most of the jobbing interests had covered freely before it went into effect. Independent makers are particularly pleased with the change as it will enable some of them to operate at greater advantage than before. We quote, Chicago discounts in car lots, as follows: ¾ to six-inch black steel pipe, 77.35, and galvanized, 67.35. From store in small lots, Chi-

cago jobbers quote 74½ to 75 per cent discount on the base sizes.

Boiler Tubes.—Demand for tubes continues satisfactory. Jobbers have ample stocks and can give early deliveries. Prices are firm, but without change, as follows. 2¾ to five inches, steel, 68.35; iron, 55.35; seamless, 2¾ to 4½, 50.85. Less than carload lots from store, base sizes, are 60 off for steel; 47½ for iron, and 42½ for seamless tubes.

Wire Products.—The car shortage, scarcity of labor and the dearth of raw material are three conditions which are playing havoc with mill deliveries. Each one is severely felt in the west, and to make matters worse there is no prospect of immediate improvement. Mills are glutted with specifications and supplementary orders, and the indications are that October will exceed September in the total volume of business taken. Prices are very firm, as follows:

Wire nails, $2; painted barbed wire, $2.15; galvanized barbed wire, $2.45; smooth annealed wire, $1.85; smooth galvanized wire, $2.15; polished staples, $2.15; galvanized staples, $2.40. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—Good brands of foundry and furnace coke are becoming very scarce. Early shipments are especially hard to obtain owing to the car shortage and congestion of specifications at producing points. Connellsville foundry coke is now firm at $4 ovens in any quantity, and $3.50 to $3.75 is asked for furnace coke. Wise county foundry brands are firm at $3.75 ovens. Solvay coke is selling at $6.40 Chicago.

Old Material.—Railroad lists this week aggregate 6,000 tons. Of this, the Burlington is offering 3,200 tons, the C. M. & St. P., 2,400 tons, of which 1,000 tons is No. 2 railroad wrought, and the C. R. I. & P., 2,500 engine and car wheels. The consumptive demand for scrap continues to increase, and two large interests are quietly engaged in picking up desirable lots wherever obtainable. Car wheels and cast scrap are especially active, and both materials are stronger in tone. Country dealers are chary in offering their stocks, anticipating a higher market at an early date. The market is undeniably stronger in tone in all its branches. Old steel rails and car wheels are each 50 cents higher, and iron car axles 25 cents higher. We have revised our prices, and quote gross tons in the first paragraph, as follows:

Old Steel Rails (4 feet and over)	$17.50 to 18.00
Old Steel Rails (less than 4 feet)	17.50 to 18.00
Old Car Wheels	19.50 to 20.00
Old Iron Rails	25.50 to 26.00
Relaying Rails, subject to inspection	28.00 to 30.00
Frogs, Switches and Guards	17.00 to 17.50
Heavy Melting Steel	16.50 to 17.00
Mixed Country Steel	14.50 to 15.00

We quote net tons, as follows:

No. 1 R. R. Wrought	$17.50 to 18.00
No. 2 R. R. Wrought	16.50 to 17.00
Shafting	18.50 to 19.00
Dealers' Forge No. 1	13.00 to 13.50
Wrought Pipe and Flues	12.25 to 12.75
No. 1 Cast, 150 pounds and less	15.50 to 16.00
No. 1 Mill	9.00 to 9.50
Mixed Busheling (No. 1 & No. 2)	12.00 to 12.50
Country Sheet	8.00 to 8.50
No. 1 Boilers Cut	11.50 to 12.00
Boiler Punchings	15.00 to 15.50
Iron Car Axles	24.75 to 25.00
Steel Car Axles	20.50 to 20.75
Iron Axle Turnings	10.00 to 10.50
Cast Borings	8.50 to 9.00
Mixed Borings, etc.	8.50 to 9.00
Machine Shop Turnings	10.00 to 10.50
Railroad Malleable	15.50 to 16.00
Agricultural Malleable	15.00 to 15.50
Stove Plate and Light Cast Scrap	12.50 to 13.00
Old Iron Splice Bars	20.00 to 20.50

CLEVELAND.

Larger Advance Now Expected in 1907 Ore Prices.—The First Sales.

Office of THE IRON TRADE REVIEW, BROWNING BUILDING, Oct. 24.

Iron Ore.—There have been some important developments in regard to the iron ore market during the past few days. It was expected that there would be an advance of about 25 cents per ton on non-Bessemer ores and 50 cents on Bessemer ores for next year, but sales have already been made at an advance of 50 cents on non-Bessemer and 75 cents on Bessemer. These sales were made by a large independent interest which last year came into the market early and sold its ores about 25 cents less than other interests. This firm in entering the market so early this year at such stiff advances, is therefore making up for not charging quite so much last year. Although other selling interests doubt the wisdom of this heavy advance, which places prices at the highest figure which has prevailed since 1900, they will in all probability follow the precedent which has been established. Prices of Lake Superior iron ore shipped at Lake Erie ports for eight years are contained in the accompanying table

	1900	1901	1902	1903	1904	1905	1906	1907
Old Range Bessemer	5.50	4.25	4.25	4.50	3.25	3.75	4.25	5.00
Mesabi Bessemer	4.50	3.25	3.25	4.00	3.00	3.50	4.00	4.75
Old Range Non-Bessemer	4.25	3.00	3.25	3.60	2.75	3.20	3.70	4.20
Mesabi Non-Bessemer	4.00	2.75	2.75	3.20	2.50	3.00	3.50	4.00

The price of ore is based on a suppositious ore containing 63 per cent metallic iron, 0.045 phosphorus and 10 per cent moisture for Bessemer ores, and 60 per cent iron and 12 per cent moisture and no phosphorus guarantee for non-Bessemer ores. The buying movement is now expected shortly. It will be exceedingly brief, amounting to little more than the apportionment of ores in accordance with applications already on file. The Bessemer supply, it is admitted, has been under option for some time.

Pig Iron.—The past week has been noteworthy in pig iron as marking the beginning of buying for the third quarter of 1907. Several sales have been made at about the same level of prices as prevail for the second quarter. Furnace interests in this district are one by one clearing out their product through the first half and are retiring from the market, but there is still a large tonnage of unfilled requirements both for immediate and later delivery, and consumers are certain to experience increasing hardships. Inadequate transportation facilities are interfering seriously with the movement of iron, and in some instances considerable tonnages are stored in furnace yards awaiting shipment, while foundries are suffering severely. There is considerable complaint in the Cleveland district on this account and conditions in the Buffalo district are much more acute, one large interest securing only about one-fourth of its requirements of cars. Locally, spot iron is selling at $22 for No. 2 foundry. We quote Cleveland delivery, second quarter, as follows:

Bessemer	$19.50 to 20.00
No. 1 Foundry	20.00 to 20.50
No. 2 Foundry	19.50 to 20.00
No. 3 Foundry	19.00 to 19.50
No. 2 Southern	19.85 to 20.10
Gray Forge	18.00 to 18.50
Gray Forge, Southern	16.00 to 16.50
Lake Superior charcoal	20.00 to 21.00

Coke.—Foundry coke has advanced slightly during the week, and is now quoted at $3.90 to $4.15 ovens for early or first half delivery. Furnace coke is procurable at about $3. The car situation in the coke region is unimproved.

Finished Materials.—There is little change either in deliveries or prices. Contracting of structurals and plates for next year's delivery has been practically completed, in almost every instance the tonnage involved being heavier than during the current year, with every prospect that actual requirements will force specifications to the limit. Jobbers report unusually heavy business for this time of year. Bars are extremely active with deliveries considerably interfered with by the lack of cars. Billets continue scarce at unchanged prices.

Old Materials.—The tendency continues upward with the market active. Considerable buying is being done and prices are firm as follows, Cleveland

delivery, gross tons in first paragraph:

Old iron rails	$25.00 to 26.00
Old steel rails (over 6 feet)	18.00 to 19.00
Old steel rails (under 6 feet)	17.50 to 18.00
Old car wheels	18.50 to 19.00
Steel boiler plate	15.00 to 15.50
Steel axles	21.00 to 22.00
Malleable iron (railroad)	17.00 to 17.50
Malleable iron (agricultural)	15.00 to 15.50
Heavy steel	16.50 to 17.00
Country mixed steel	14.50 to 15.00

We quote net tons as follows:

No. 1 R. R. wrought	$18.00 to 18.50
No. 1 busheling	14.50 to 15.00
No. 1 machine cast	16.00 to 16.50
Iron axles	24.00 to 25.00
Axle turnings	11.50 to 12.00
Wrought turnings (free from cast)	10.50 to 11.00
Grate bars	13.00 to 13.50
Pipes and flues	14.00 to 14.50
Tank iron	12.00 to 12.50
Hoop and band iron	9.00 to 9.50
Sheet iron	8.00 to 8.50
Wrought drillings	10.50 to 11.00
Stove plate	13.00 to 13.50
Cast borings	8.50 to 9.00

CINCINNATI.

Scarcity of Iron Closes Large Plant.—Some Southern Furnaces Holding Aloof.

October 23.

Pig Iron.—The market has been fairly active the past week and continues strong. Spot iron is scarce and prices are irregular with southern brands ranging from $18.00 to $19.00 Birmingham. Furnace shipments on contracts are slow and we hear of one large plant in Ohio that has been obliged to close down its foundry for want of iron, owing to disappointment in receiving its quota from furnaces. Several other large consumers are scouring the market for quick shipment iron, especially No. 2 soft, and for this grade we learn that $19.00, Birmingham, has been bid. It is reported that prompt shipment malleable iron has sold at $23.00 at Ohio furnace.

First quarter delivery iron is showing a hardening tendency, both in the north and south, with offerings becoming small. Southern Ohio furnaces are reported as almost sold up for the entire first half of the year. Southern iron is still in fair supply for the second quarter and one sale of southern for second quarter delivery was reported during the week at $15.50 Birmingham on a lot of 2,000 tons. This, however, is exceptional and probably could not be done again. The market for the first quarter may be regarded as $16.00 to $16.50 with the higher figure the most quoted. For second quarter $16.00 Birmingham could be done without difficulty. In southern Ohio there is not much iron offered for first quarter and prices are difficult to quote with about $20.50 to $21.50 as a nominal price. For second quarter a sale of 1,500 tons, divided between three furnaces, was made at $20.00 furnace which practically establishes the market for that delivery.

There has been some buying of high silicon iron to take the place of the shortage in the higher grades in mixtures and eight per cent has sold at $25 furnace. Gray forge is firm with a sale of 1,000 tons for delivery this year reported at $15.50 Birmingham. A sale of 2,000 tons of southern foundry for second half delivery is reported at $16.50, Birmingham, as being closed today.

There are still evidences of some of the southern furnaces having held aloof from the market for next year's business with the expectation of selling their current make as spot iron at the premium prices which are likely to prevail, but this iron, if there be enough of it, will tend to relieve the stringency which it is expected will prevail. Quotations are revised to cover delivery in the first quarter, f. o. b. Cincinnati:

Southern Foundry No. 1	$19.50 to 20.00
Southern Foundry No. 2	19.00 to 19.50
Southern Foundry No. 3	18.50 to 19.00
Southern Foundry No. 4	18.00 to 18.50
Southern Foundry No. 1, soft	19.50 to 20.00
Southern Foundry No. 2, soft	19.00 to 19.50
Gray Forge	17.50 to 18.00
Northern Foundry No. 1	22.15 to 22.65
Northern Foundry No. 2	21.65 to 22.15
Northern Foundry No. 3	21.15 to 21.65
Jackson County Silvery, 8 per cent	26.15
Southern Charcoal	25.50 to 26.00

Coke.—The offerings are becoming more and more restricted with prices advancing. Some important operations have withdrawn from the market. Quotations are revised again this week to a higher plane. Prices in the leading coke producing districts are as follows:

Wise County, Va. Furnace Coke prompt shipment	$3.25 to 3.50 per ton
Wise County, Va. Foundry Coke on contracts	3.75 to 4.00 per ton
Pocahontas Furnace Coke prompt shipment	3.25 to 3.40 per ton
Pocahontas Foundry Coke on contracts	3.25 to 3.50 per ton
Connellsville Furnace Coke prompt shipment	3.00 to 3.25 per ton
Connellsville Foundry Coke on contracts	3.75 to 4.00 per ton
New River Foundry Coke on contracts	3.40 to 3.50 per ton
New River Furnace Coke, prompt shipment	2.75 to 3.00 per ton

†Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.70 to $1.75 per ton on $9.00 pig iron, plus 19 to 20 per cent of the advance on pig iron above $9.00 Birmingham.

Finished Material.—The market continues firm and specifications on contracts are good. The jobbing demand is active and sales from store are heavy. In some lines prompt shipment brings a premium over current quotations. We quote:

Bars at 1.73c, half extras, with dealers quoting 1.85c for iron and steel out of store. Galvanized sheets No. 10 and No. 12, in car lots are 2.68c. We quote black sheets, No. 27 at 2.53c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.90c; No. 27, 2.70c; No. 16, 2.25c; No. 14, 2.20c; No. 12, 2.15c. Tank plates are firm and sell out of store at 2c to 2.10c for ¼-inch and 2.10c for 3-16 Nos. 8 and 10. Beams and channels are quoted at 2.25c to 2.35c from stock and angles at 2.10c to 2.15c for base sizes.

Old Material. The market is strong with prices showing an upward trend under a good inquiry from melters. Dealers are firm in their views and quotations are revised as follows, representing dealers' quotations, f. o. b. Cincinnati.

Old No. 1 railroad wrought, net tons	$17.50 to 18.00
Cast machine and foundry, net tons	15.00 to 15.50
Old iron rails, gross tons	24.00 to 25.00
Old steel rails, gross tons	18.00 to 18.50
Old short lengths, gross tons	17.00 to 17.50
Old iron axles, net tons	23.00 to 24.00
Heavy melting scrap, gross ton	19.50 to 20.00
Stove plate, net tons	12.00 to 12.50
Wrought turnings, net tons	10.00 to 10.50
Cast borings, net tons	8.00 to 8.50
Car wheels, gross tons	17.50 to 18.50

NEW YORK.

Pig Iron Importations Increase.—Delayed Supplies Pinch Consumers.

Office of THE IRON TRADE REVIEW.
Room 1315, No. 150 Nassau St., Oct. 23.

Pig Iron.—The situation has not improved during the week. The scarcity of supplies, especially of foundry grades, is so great that prices are of minor consideration. As high as $25 and over has been paid for spot metal, and future quotations are following spot prices up the scale. Several large producers have withdrawn from the market for the first half of 1907, and others are reluctant to accept more orders from fear of overselling. In the meantime the pinch for supplies is beginning to be felt, especially in New England where more than one foundry is in difficulty owing to short, or rather, delayed, supplies. In spite of the great demand, buying has not been in large volume, and has been confined to a few sellers. The feature of the week has been more sales of basic, and arrangements for more importations. An eastern steel mill purchased about 30,000 tons of basic at the rate of $19 and $19.50 delivered, and negotiations are on foot involving additional tonnages at still higher prices.

Foreign iron to the amount of from 30,000 to 50,000 tons has been arranged for. One buyer in Philadelphia alone took half of this total, partly presumably for resale. Business in domestic foundry has been in scattering lots with some fair tonnages. One southern firm disposed of 70,000 tons for delivery prior to July, 1907, during the past two weeks, later demanding $17.50, Birmingham, for No. 2, and still later refusing to sell beyond July 1. Some large inquiries are coming in

from unexpected sources for November and December iron. Prices are rising almost daily.

Inquiries going the rounds today amount to upwards of 50,000 tons. This is mostly foundry but also includes basic, malleable Bessemer and gray forge. Dealers are not inclined to talk closely concerning business which is due largely to the extreme variation of prices. Actual offers of spot where they can be found at all differ as much as two and three dollars per ton. Indeed, some dealers say bluntly that there is no market price, that sales depend entirely upon possibility of securing the metal.

Ferro-manganese is unaccountably quiet, sales being inconsiderable and the price having receded to about $75, tidewater. Coke is scarce and higher, but sales and shipments proceed with considerable regularity.

Northern No. 1 Foundry	$21 50 to 22 50
No. 2 Foundry	21.00 to 22.00
No. 2 Plain	20.50 to 21.50
No. 1 Southern Foundry	21.50 to 22.50
No. 2 Southern Foundry	21.00 to 22 00
No. 3 Southern Foundry	20 50 to 21.00
No. 4 Foundry	19.50 to 20.00

Certificates and Standard Contracts.—Trading on the New York Produce Exchange has not been brisk owing to extremely short supplies in the yards. Still there were sales aggregating 800 tons for November and December delivery. Monday trading in a new form of foundry contract began. These contracts call for No. 1, and No. 2, only. The following are quotations for standard foundry iron contracts:

Standard Foundry Contracts.

	Bid.	Asked.
October	20.50	....
November	20.00	....
December	20.00	21.00
January	19.00	....

Finished Iron and Steel.—Scarcity of supplies and inability to guarantee shipment in a reasonable time are the most important features of the steel trade. The pressure upon the mills continues, but new business awaits upon more definite promises to deliver. This is especially true as regards structural steel and rails. Neither buyers nor sellers care to test the uncertainties of the future too far. The demand for billets is pressing and importations of foreign material are among the probabilities. Fires have been kindled in the new open-hearth furnaces of the Milliken plant on Staten island and ingots will be cast this week. These furnaces will produce about 10,000 tons per month of which about one-half will be available for the market.

In the structural field little of interest has come out. Nearly all the big jobs have been closed up, one, the City Investment still hanging fire. The large offices are now estimating on railroad bridge work for next year, of which the tonnage will undoubtedly be heavy. The Northern Pacific has received bids on about 8,000 tons of material but no award has yet been made. Numerous small contracts have been placed for structural shapes and plates by manufacturers of cars, and there is still a good demand for material for additions to industrial plants.

There have been no large contracts for steel rails, but a large tonnage is under negotiation, the hitch being due to a question of delivery. Trolley roads have purchased a number of small lots. Iron bars are in strong demand. The Bar Association met in the Waldorf-Astoria last Thursday for the customary monthly conference. The old price of $1.50 base Pittsburg, was reaffirmed, but dealers have no difficulty in securing $1.70.

The following are prices at tidewater: Angles, 3 to 6 inches x ¼ inch and heavier, 1.84½c; beams, 3 to 15 inches 1.84½c; tees, 3 x ¼ inch and heavier, 1.89½c; plates, carloads, tank, 1.74½c; flange, 1.84½c; marine boiler, 2.41½c; refined iron bars, 1.84½c; soft steel bars, 1.64½c to 1.84½c; sheets, No. 28 black, 2.50c.

Old Materials.—The market for all descriptions of cast scrap is active and prices are a shade higher, with stocks in the vicinity very light. For the rest, there has been little or no change. Consumers seem to have checked the rise in prices of wrought and heavy melting steel, but holders of supplies are not anxious to sell. The following are prices approximately f. o. b. tidewater:

Old iron rails	$25.00 to 25 50
Old steel rails, long lengths	16.50 to 17.00
Old steel rails, short pieces	15 50 to 16.00
Relaying rails	25.00 to 26.00
Old car wheels	18.00 to 19.00
Old iron car axles	29.00 to 3 .00
Old steel car axles	20.00 to 21.00
Heavy melting steel scrap	16 00 to 17.00
No. 1 railroad wrought scrap	19.00 to 20.00
Iron track scrap	18.00 to 19.00
Wrought pipe	13.50 to 14.00
Cast borings	11 00 to 11.50
Wrought turnings	12.50 to 13.75
Heavy Cast Scrap	17.50 to 18.50

PHILADELPHIA.

Orders Heavily Increased While Stocks are Low.—Melters in Quandary.

October 23.

Pig Iron.—The situation in this territory was very thoroughly discussed at last week's meeting of the Eastern Pig Iron Association, and reports were presented showing that the orders now on the books of members aggregate over 760,000 tons, an increase of some 110,000 tons over the previous month; that the stocks on hand amount to less than 15,000 tons, and that all furnaces are sold up to practically their capacity for seven months ahead. An exchange of views showed a very general disinclination to take any orders for delivery beyond July 1, 1907. The situation thus disclosed is so strong that the furnace men have felt justified in boosting prices a bit higher, especially as developments from day to day indicate an astonishing scarcity of supplies in the hands of some large consumers. In some instances firms that have been accustomed to carry a month's supply of pig iron now have only enough to carry them for three or four days. It is such consumers as these who have paid as high as $25.75 for No. 1 X foundry, and who expect before long to have to pay $25 for No. 2 X. In view of these facts the dealers have begun to cut down on orders for next year, as well as to put up prices. Inquiries and orders continue to make an active market, though many dealers have withdrawn entirely for the remainder of 1906. Prices, which show every tendency to rise, continue remarkably strong and active, as follows:

No. 1X Foundry	$23 00 to 24 00
No. 2X Foundry	22.00 to 23 00
No. 2 Plain	21.00 to 22.25
Standard Gray Forge	18.75 to 19.50
Basic	20.00 to 20 50
Low Phosphorus	25.50 to 26.50

New Material.—Business continues in immense volume, but the increased productive capacity seems to take care of it so readily that there is no great excitement over the rush. Prices continue without change, as follows: Beams, channels and angles according to specifications, 1.83½c to 2c; refined iron bars, 1.83½c to 1.88½c; steel bars, 1.78½c to 1.83½c; plates, 1.73½c to 1.83½c.

Old Material.—The market has been rather mixed, and the slackening in the buying by the mills has led to some concessions in prices. These are not expected to be permanent, however, and the approach of real winter is expected to bring higher figures all around. For the present prices may be quoted as follows:

Old steel rails	$18.50 to 19.00
No. 1 steel scrap	18.25 to 18.75
Old steel axles	22.50 to 23.00
Old iron axles	31.00 to 32.00
Old iron rails	26.00 to 26.50
Old car wheels	21.00 to 21.50
Choice scrap, R. R. No. 1 wrought	21.50 to 22.00
No. 1 yard scrap	19.50 to 20 00
Machinery scrap	18.50 to 19.00
Low phosphorus scrap	22.50 to 23.00
Wrought iron pipe	16.00 to 16.50
No. 1 forge fire scrap	15 50 to 16.00
No 2 forge fire scrap, ordinary	12.00 to 12.50
Wrought turnings	14.25 to 14 75
Axle turnings, heavy	15.00 to 15.50
Cast borings	11.00 to 11.50
Stove plates	14.00 to 14.50

Frederick H. Clarke on the reorganization committee of the Susquehanna Iron & Steel Co., announces that the endorsement of its plan by more than a strong majority of stockholders is now assured.

ST. LOUIS.

Conditions Extremely Strong With Danger of Runaway Market.

October 23.

Pig Iron.—With practically no spot iron for sale, with the first quarter almost sold up and furnaces turning down orders for the second quarter, it looks today as if there could be no power to stop a runaway market. Already there is talk of importing iron, but since this cannot reach this country in quantities sufficient to affect the market seriously for at least sixty days it looks as if prices will go soaring. There was an advance of $1.50 week before last in this market and another of from 50 cents to $1 in the week just closed, so that $25 iron is not a far cry. It is reported that as high as $22 was offered for iron for immediate delivery, but it could not be furnished.

There is a regular scramble for iron and consumers are bidding against each other for what little there is in sight. There is no doubt that the southern production has been curtailed from 20 to 35 per cent on account of weather and labor conditions. This in the face of an unprecedented demand has worked the result. Some are of the opininon that melters are suffering from a case of hysteria, that they are doubling their orders because they fear they will not be able to get the iron later.

The quotation for the first quarter is $17.00 to $17.50, with $17.00 firm as the quotation for the second. These quotations are purely nominal, however, as agents report that their houses, in most instances, are turning down orders every day at these figures. Agents are trying merely to take care of regular customers.

Scullin & Gallagher have bought 12,000 tons of basic, dividing the order among three houses. The National Stamping & Enameling Co. is in the market for 6,000 tons of basic. An Iowa house has inquired about 3,000 tons of various grades. Iron quotations for the first quarter, including the freight rate of $3.50 to East St. Louis, range as follows:

Southern No. 1	$21.50 to 22.00
Southern No. 2	21.00 to 21.50
Southern No. 3	20.50 to 21.00
Southern No. 4	20.00 to 20.50
Gray Forge	19.50 to 20.00

Coke.—Coke made another advance during the week just closed. It is now selling freely at $6.90 to $7.20. The ovens are not willing to make contracts, but show great preference for current orders.

Finished Material.—The St. Louis Expanded Metal & Corrugated Bar Co. has the contract for the 2,100 tons of steel bars required for the Butler Bros. building, which will be constructed of reinforced concrete.

Metal Market

NEW YORK.

October 22.

Pig Tin.—The market has fluctuated during a wide range owing to speculative influences abroad but today it closed steady.

The following are today's quotations. Spot and October, 43.20 to 43.50; November and December, 43.00 to 43.50; London, £198 10s and £198 5s. Arrivals for the month to date, 2,290 tons. Afloat, 2,920 tons.

Copper. — Financial disturbances abroad have been a disturbing factor, but at the close the market is firm and practically unchanged. Today's quotations: Lake, 21½ to 22½; electrolytic, 21½ to 22; casting, 21¼ to 21¾; London, £99 10s and £99 5s. Exports for the month to date, 9,179.

Lead.—Refined lead has been quiet. It closed steady with a moderate demand and small offerings. Today's quotations: 5.85 to 5.95; St. Louis, 5.85. London, £19 15s.

CHICAGO.

October 22.

Lake copper is hard to obtain and the quotation of 24½c made by Chicago jobbers is a nominal one. Casting, which is more plentiful is held at 24c to 24¼c Chicago, in carload lots. Pig tin has advanced to 45¾c; spelter is without change at 6.50c to 6.60c; lead desilverized, is held at 6.10c to 6.15c, all for carload lots, Chicago delivery. All quotations on sheet zinc have been withdrawn, and while the price has not yet been changed, it is impossible to buy on the basis of 7.75c list f. o. b. LaSalle in car lots of 60-lb. casks. Cookson's antimony is firm at 28½c; and other grades from 26½c to 27½c. Old metals continue in good demand, and while prices are no higher, the market is stronger in tone. We quote dealers' buying prices, as follows: Copper wire, 18¼c; heavy copper, 18c; copper bottoms, 17½c; copper clips, 17¾c; red brass, 17½c; red brass borings, 14½c; yellow brass, 13c; yellow brass borings, 11½c; light brass, 9½c; lead pipe, 5.40c; tea lead, 5c; zinc, 5c; pewter, No. 1, 26c; tin foil, 32c.

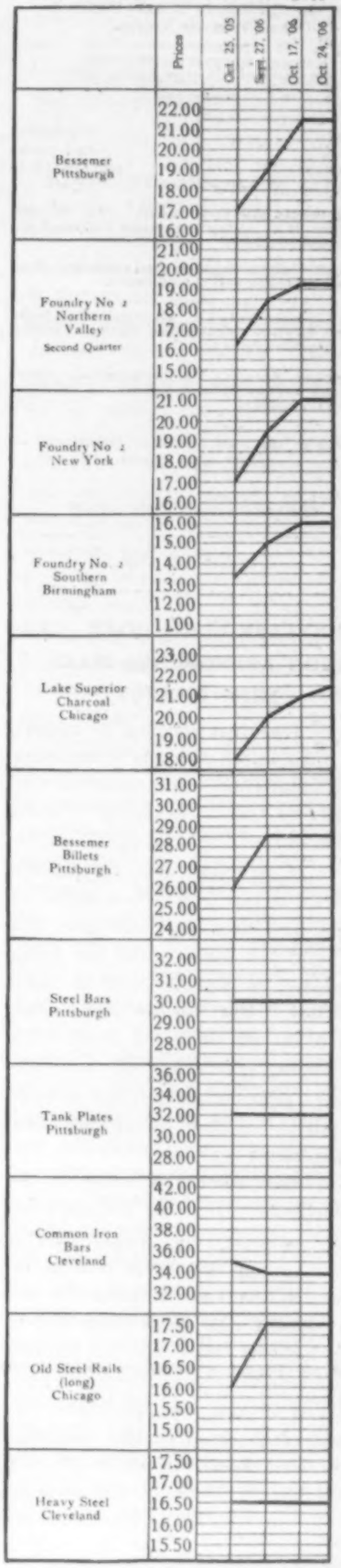
ST. LOUIS.

October 22.

A rise of 13½ cents was scored by spelter in the last week, bringing the price up today to $6.20. One hundred tons were sold early in the week at $6.12½ and Saturday 100 bought $6.20, at which price the market is strong today with the metal in active demand.

PRICE CHART.

(Pig Iron Quotations are For Delivery During First Half of 1907)



THE IRON TRADE REVIEW

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October 25, 1906.

CONNELLSVILLE COKE REGION APPROACHES MAXIMUM OUTPUT.

It is somewhat startling to observe that the number of ovens in the regular Connellsville coke region as reported by the Connellsville *Courier* at the present time is 23,358, an increase of only five over the number reported a year ago. New ovens of course have been built, and more will be built, but older ovens are being abandoned, so that the total is about stationary. The *Courier* states indeed that of the 472 idle ovens of the Frick operations practically all have exhausted their coal seams, and will not be able to run again unless under new arrangements.

The total number of ovens in the Connellsville region has become practically stationary only within the past year. During 1905 there was an increase in the total between 600 and 700. In the eight years from 1898 to 1905 inclusive there was an increase of about 4,886 ovens, or 611 per year, and this increase was distributed with considerable uniformity, although there were spurts in 1900 and 1903. There was another period of great activity in new construction in the six years from 1886 to 1891, when the number increased from 10,471 to 17,551, averaging 1,180 per year.

These statistics refer only to the number of ovens. The production has increased in greater ratio due (1) to greater steadiness of operation and better facilities; (2) to the erection of a few Semet-Solvay by-product ovens, having a greater output per oven than the beehive operations; (3) to the change from foundry to furnace coke, the latter being burned two days instead of three and giving a greater yield to coal charged. The greatest change in this respect was made by the H. C. Frick Coke Co., which, after decreasing its proportion of foundry coke for some time, on Jan. 1, 1903, announced its complete withdrawal from the foundry coke market. Some of the smaller operators, on the other hand, are disposed to produce a greater proportion of foundry coke, as with limited supplies of coal the much greater price obtainable for foundry coke is an advantage.

Standard Connellsville furnace coke and Lake Superior ores have been ideal raw materials for pig iron making, particularly for pig iron destined for steel manufacture. Lacking either of them the American iron and steel industry would not have attained its present magnitude, which magnitude is the product of American capital, energy and skill displayed in the facility with which these raw materials were obtainable. Those factors were all as large as possible; to decrease a single one of them would have been to decrease the product.

For many years the growth of pig iron manufacture in the United States and the growth of Connellsville coke production proceeded quite on a level. Just of late the harmony has been broken, the gain in pig iron production being much greater than the gain in Connellsville coke production. This year and last the Connellsville region is making scarcely three-fifths as many net tons of coke as the country is making gross tons of pig iron. There have been many years in the past when the proportion has been above three-fourths of a net ton of Connellsville coke to one gross ton of pig iron. Since 1880 there have been seven years when the proportion was exceeded: In 1883-4-5 it was about 0.77; in 1889 it was 0.78; in 1894 it was 0.81 and in 1895 the highest of all, 0.866; in 1899 it was 0.76. A curious thing is noticed in a study of conditions in these years, the periods 1883-4-5 and 1894-5 were periods of great depression; the years 1889 and 1899 were "boom" years. The apparent anomaly of an industry flourishing most when conditions were either particularly bad or particularly good is, however, not so irrational as might be thought: in the bad periods pig iron production had decreased, but the Connellsville region held its own because, all coke prices being low, the Connellsville coke had the preference. Again, in a boom the Connellsville region profited first because its resources were so well known and exploited that its production could the most easily be increased. The height of its glory, in a competitive sense, was in 1895, when for every 1,000 gross tons of pig iron which the whole country produced, the old Connellsville region produced 866 net tons of coke.

The failure of the old Connellsville region to keep pace with developments in the iron trade would have been more generally realized were it not that its statistics are so often combined with those of the Lower Connellsville, Masontown or Klondike region. That region has grown rapidly since it was opened in 1900. It closed that year with 2,000 ovens, and has pretty regularly added a thousand ovens or more each year, now having 8,933 ovens. While in the past twelve months the old Connellsville region has gained but five in the total number of ovens, the Lower Connellsville has gained about 1,700 ovens.

The amount of standard coal in the Connellsville region is known almost to a ton. At the present rate of working the supply will last for about a quarter of a century. There is no likelihood now that the rate of exhaustion will be materially increased. There is no advantage in exhausting it at a more rapid rate; it may rather

be found desirable to conserve the supplies, saving them for special purposes.

The iron trade has found no special difficulty in adapting itself to other coals. Where the coke made therefrom will not stand the burden of a 600-ton blast furnace, the blast furnace has been built smaller. All things considered, the advantages respectively of 300 or 400 ton furnaces and 600 ton furnaces pretty well balance each other. Where washing was necessary, washers in plenty have been devised, and they have performed their work more or less satisfactorily according to the duty put upon them. It will be recalled that the advocates of the by-product oven met a very cold reception in the early nineties, but when it became necessary to depend so extensively upon coals outside of the Connellsville region, it was readily adopted.

The easy transition in the matter of coke teaches a lesson which must be applied to ore. As above said, Connellsville coke and Lake Superior ore increased in use simultaneously. One has already begun to fail to meet the increased demands upon it, and the other is on the verge of doing so. If pig iron production in the United States continues to increase at anything like the rapid pace of the past few years, the percentage of Lake Superior ore to total ore will begin to decrease. Thus far it has been increasing with scarcely a break. It is unlikely the change in relative percentage will come this year, but it is not many years distant. It will in all probability be found that the trade can swing over to the use of other ores with less difficulty than has been anticipated. The change may be easier in ore than in coke, because there are ores to be used which do not have the drawback of affecting the quality of the pig iron, but merely the drawback of costing money to concentrate or enrich. The American iron trade has had to solve many and varied problems in its erratic but very successful career, and it will be strange indeed if it does not readily solve those which are arising in regard to its chief raw materials.

A POSSIBLE DEVELOPMENT IN THE MOLDERS' TRADE.

The article in another column of this issue of THE IRON TRADE REVIEW on conditions obtaining at present in the foundries in Milwaukee may suggest to some minds a possible development in the molders' trade, as a result of the present strike on the part of the Iron Molder' Union. It has long been held, and doubtless it is true, that it takes at least four years to make a molder. To make a good, all-around molder, capable of handling any job offered him, it probably requires longer, but as shown in Milwaukee, it takes considerably less than four years, and, in some cases, less than four months, to instruct a man who has absolutely no knowledge of the molders' trade, so that he can turn out work of a certain character in a highly satisfactory manner.

For a number of years there has been great complaint among the employers of machinists, that the old-time, all-around, Yankee machinist, who could turn his hand to anything, who could work on a lathe, planer, milling machine, or at the bench with equal facility, has become almost extinct. His place has been taken by a multitude of so-called machinists such as lathe hands, planer hands, milling machine hands, vise hands and the like, with a consequent detriment to the trade. It is not only possible but probable that a similar situation may come to exist in the molders' trade as a result of the present strike-breaking methods now in force in Milwaukee and in other cities. It may be that in the future, it will be possible to obtain molders skilled on one character of work, but totally useless, or almost so, on any other character. We may yet come to hear of cylinder molders, of engine bed molders, of gear wheel molders, etc.

The employers have discovered that they can take the unskilled men from the streets, boys from the high schools and laborers generally, and with a good foreman, who thoroughly understands his business, teach these men to make castings of repetitive types. Having found out that they can do this, and providing that the foundry is of such size as to employ a comparatively large number of men, each one of whom can work continually on castings of similar nature, the employers may be unwilling to find a place for the all-around, skilled molder, and his place may be taken by the aforesaid cylinder molders, engine bed molders, etc. This phase of the question should be given serious consideration by those who are directing the affairs of the iron molders.

SCARCITY OF LOW PHOSPHORUS PIG.

A considerable quantity of low phosphorus pig iron is being imported at the present time. This is not done because the domestic production has declined, since it reached 114,447 tons in the first half of this year, a record for six months, but because demand has outrun production. To encourage an increase in domestic production the limit on low phosphorus pig iron has lately been raised by most consumers from 0.035 to 0.04 per cent, it being increasingly difficult to find suitable ores. The chief sources of supply are a few mines in the Lake Superior region, the Cranberry district of Tennessee, and imports, chiefly from Cuba.

Unfortunately the government does not separate pig iron into grades in presenting the statistics of general imports month by month. The annual presentation of "imports for consumption" segregates ferro-manganese, spiegeleisen and ferro-silicon, all other pig iron imports being lumped. It is to be noted, however, that pig iron imports, outside of the manganese metals, but including ferro-silicon and low phosphorus iron, amounted to 57,137 tons in the first half of this year, against 80,994 tons in the second half of last year. The imports of manganese metals largely increased, so that the total imports, as given month by month, showed an increase. The imports of all classes of pig iron, including the manganese metals, averaged 24,469 tons per month in the first six months of this year. In July they were 37,509 tons and in August 18,843 tons, the two months averaging less than 4,000 tons in excess of the monthly average for the first six months. There is no hint in these figures of any large importation of ordinary pig iron.

WILL MEET AT BOSTON.

National Metal Trades Association Will Convene on March 20-21.

The next annual meeting of the National Metal Trades Association will be held at Boston, Wednesday and Thursday, March 20 and 21. This date was decided upon at the semi-annual meeting of the administrative council held in Cincinnati last week. At this meeting a large amount of routine business was transacted, and the labor situation over the country was carefully considered. The officers of the organization were highly commended for the way in which they had handled the various labor troubles of the members, and for their success in upholding the principle of the association. The membership roll shows an increase since the last convention, six months ago, of 47 per cent in number of firms. In point of number of operators, however, the increase is about 56 per cent, showing that the larger concerns are becoming interested in the association and are joining their fortunes with it.

The meeting of the administrative council in Cincinnati was taken advantage of by representatives of a number of foundry firms to promote an organization among themselves. A banquet was held at the Grand hotel at which W. B. Sayle, of Cleveland, president; Robert Wuest, acting commissioner; John Kirby, of Dayton, O.; A. M. Barker, of Boston, and G. K. Garvin, of New York, all members of the Metal Trades Association, were guests. The organization of a foundrymen's society was strongly advocated and plans were developed which will doubtless result in its accomplishment within a very short time.

In the Buffalo District.

Members of the Buffalo Foundrymen's Association, which is a branch of the National Metal Trades Association, and the Buffalo Boiler Manufacturers' Association, held an informal banquet at the Ellicott club last week with about 75 in attendance. The affair was such a complete success that it is planned to hold another gathering in the near future, and probably to continue the meetings throughout the winter.

With the addition of the Buffalo Foundry Co. to the ranks of the open shop in this district, the members of the Buffalo Foundrymen's Association claim they have fully subdued the striking molders. The Buffalo Foundry Co. recently dismissed eighty-eight molders, who declined to work on orders from the Allis-Chalmers Co. of Milwaukee. "The Buffalo Foundry Co.," said John Gorss, secretary of the Buffalo Foundrymen's Association, "is paying better wages than the union men were getting. The output is even better. There is more tonnage than there was under the union rules. We don't see any more pickets of the strikers and everything is lovely."

Labor Notes.

The strike at the plant of the Star Brass Mfg. Co., Boston, has been settled, the men returning to work on a nine-hour basis instead of a 10-hour as originally prevailed.

Difficulties at the Keystone Stove Co., Royersford, Pa., have been adjusted.

A unionist molder was killed at Milwaukee, Oct. 17, after he had wounded a non-union molder in the arm. He was shot by a special policeman who was guarding non-union men on their way home. The party was waylaid by a quartet of strikers.

Llewellyn Lewis, vice president of the sheet mill workers' division of the Amalgamated Association, was in Youngstown, O., five days last week securing skilled workmen for a big sheet mill plant at Indiana Harbor, which has recently made terms with the iron and steel workers' union. He is scouring the country for men as it will take about 600 men to man the mills.

James A. Campbell, president of the Youngstown Sheet & Tube Co., declares that the foundry operated by that concern will operate open shop or not at all. He says this plan adopted in the bricklaying department has proven successful.

A strike of molders at Sharon and Wheatland, Pa., has been avoided by granting an increase of 20 cents per day. The coremakers are to receive an advance of 15 cents.

Three strikers were wounded in a riot Oct. 22 at the Newcastle, Pa., furnaces of the Carnegie Steel Co. The strikers stoned the furnace workers and police until the latter finally fired a volley from their revolvers to disperse them.

Blast Furnace for Japan.—Consul-General Henry B. Miller reports from Yokohama, Japan that the directors of Hokkaido Tanko Railroad Co. are planning to erect a blast furnace after the purchase of the railroad by the government. The company owns coal mines said to be suitable for coking, and iron ore is to be mined in the district extending from Poronai to Muroran.

Tube Mill's Career Ended.—It is now officially declared that the old tube mill of the National Tube Co., Youngstown, O., will never be operated again. All of the office force and the foremen have been either transferred or let out of the employ of the big corporation. The mill was formerly operated by independent interests, but several years ago was purchased by the National Tube Co. Much of the machinery is out of date. All of the skilled labor was transferred to the Lorain plant nine months ago.

The Erie railroad has placed an order with the American Locomotive Co. for three of the heaviest and most powerful locomotives ever designed. They will each weigh more than 205 tons, have 16 driving wheels and a tractive power of 98,000 pounds. They will be used on the line between Hornell, N. Y., and Susquehanna, Pa.

The new tube mill of the Montreal Rolling Mill Co., Montreal, Can., has been placed in operation under the superintendency of W. H. Crehan, formerly of Youngstown, O. The fires were lighted in the first welding furnace of the plant by Miss Marie Crehan, daughter of the superintendent, while another daughter, Miss Helen, drew the first pipe turned out. Youngstown capitalists are largely interested in the enterprise.

During the week ending Oct. 13 the Carnegie Steel Co. broke all weekly records at the Sharon and South Sharon plants. The three blast furnaces produced 9,795 tons against the record of 9,654 tons made in March. The open-hearth furnaces made 12,060 tons, the best previous record being 12,019. The universal plate mills produced 3,657 tons against 3,496 tons made last March. The angle mill of the north works jumped into the record class, turning out 3,454 tons in a week against 3,409 made the week ending April 6 last.

Incorporation papers of the New York Power Securities Co. have been filed in the office of the county clerk at Buffalo. This concern will conduct a manufacturing and mining business and engage in other iron pursuits. The capital stock is $2,500,000. Directors are: Herbert P. Bissell, Robert E. Powers, Bert L. Jones, Irving L. Fisk, Charles W. Miller, Edward M. Mills, Chauncey J. Hamlin and William C. White, of Buffalo, and John Boyd Thatcher, of Albany; Arthur Robinson, of New York, and William K. McFarlin, of East Orange, N. J.

IMPORTATIONS OF PIG IRON ARE BEGUN.

(Special Telegram.)

New York, Oct. 24.—The inability of domestic producers to supply the pig iron market is becoming apparent and arrangements for importations are an absorbing topic of conversation in the trade. During the past few days freight room has been engaged for three cargoes of English and Scotch foundry pig, in all about 15,000 tons; and 6,000 tons of Scotch is coming in small lots by the regular trans-Atlantic lines. At the meeting of the Eastern Pig Iron Association held in Philadelphia last week, it was announced that shipments of ore from the Lake Superior district would be from 10 to 15 per cent short during the coming year, and it appeared that furnaces had sold a total tonnage equal to the utmost capacity for six or seven months. The aggregate sales were 115,000 tons greater during September than during August. The higher cost of production will increase the price of sales made from the present time forward, and furnaces are in favor of holding No. 2 foundry at $22 at the furnace.

Among sales of steel rails were the following: Everett Railway & Power Co., 500 tons; White Oak railway, 500 tons; Baltimore & Ohio, 17,000 tons; Terre Haute Traction Co., 1,000 tons; Union Traction Co., 1,500 tons; Tremont & Gulf, 1,000 tons; Chicago, Lake Shore & South Bend, 8,300 tons; and manufacturers of frogs and switches, 1,500 tons.

LARGE CAR PLANT

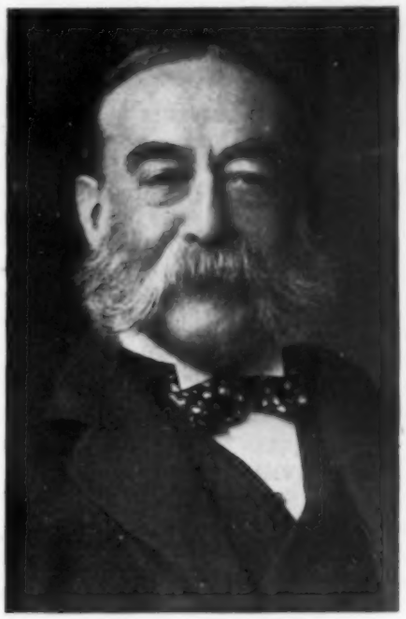
Will be Built at Hammond, Ind., by Standard Steel Car Co.

The Standard Steel Car Co., of Pittsburg, with a plant at Butler, Pa., is negotiating for the purchase of a tract of 320 acres of land at Hammond, Ind., for the erection of a plant at that place for the manufacture of steel and wooden freight cars. The estimated investment in the new plant will be $2,500,000 and the daily output will be 50 cars. The daily capacity of the Butler plant is 100 cars, so that the extension of the company by the new project will be an increase of 50 per cent in output. The new plant at Hammond is located on the Nickel Plate and Chicago Belt line railroads, giving ready access to all shipping facilities.

Details of the new plant are not complete, as certain legal formalities regarding land titles have not been settled, but it is estimated it will be completed and in operation by July 1, 1907. Plans now in hand do not call for a wheel foundry, which is one of the important features at the Butler plant, neither will the wheels be shipped from Butler, as it is estimated these can be obtained nearer the new plant, which is as handily located to sources of steel supply as is the Butler plant to Pittsburg.

GEORGE AUGUSTUS CROCKER.

George Augustus Crocker, senior member of the firm of Crocker Bros., dealers in pig iron and importers of ferro-manganese at 70-99 John street, New York, died at his home, No. 5 West 49th street, Sunday, October 21. Mr. Crocker was born in Taunton, Mass., seventy-five years ago, and was



GEORGE A. CROCKER.

educated at Brown University. He came to New York at the age of twenty-five and with his brother formed the firm of Crocker Bros. He was active in business until about five years ago when he relinquished his grasp upon details and retired to an advisory capacity. He made it a practice to visit the offices regularly until a few months ago when increasing infirmity compelled him to avoid all exertion. He was ill for many weeks, the immediate cause of death being heart failure. He was a director of the Bank of America, a trustee of St. Luke's hospital, a vestryman of St. Bartholomew's church, a governor of the Metropolitan club, and a member of the Century and Down Town clubs. His wife and three children, J. Reese Crocker, Mrs. William Sloan and George Augustus Crocker, Jr., survive him.

DETAILS OF IMPROVEMENTS AT DUQUESNE.

(Special Telegram.)

Pittsburg, Oct. 24.—The United States Steel Corporation has announced the details of its improvements at Duquesne plant of the Carnegie Steel Co. They include two blast furnaces 22 x 90 feet, 450 tons daily capacity with four gas and two steam blowing engines; also 18 open-hearth furnaces, six of which will form an extension to the present plant and 12 will be located partially on the site of the present Bessemer plant, which will be abandoned. The improvement also includes one new 16-inch mill and the 10-inch mill at Monessen will be moved to Duquesne. The improvements will also carry with them a new power station, of three 2,000 K. W. units, two of which will probably be gas, and one steam. Three four-hole soaking pits will also be added.

LATE RAIL SALES.

New York, Oct. 24.—Late rail sales include the following: Atlantic Coast Line, 25,000; Tacoma Railway & Power Co., 1,000; Puget Sound Elec., 1,000; Cumberland Valley, 4,000; Denny Labrador Co., 15,000; miscellaneous, 15,000.

The United States Steel Corporation has bought 10,000 tons of low phosphorus pig iron for delivery in the Pittsburg district. Mills are running very full though traffic difficulties and lack of raw material may prevent records in some plants.

Official Changes. — The Missouri Malleable Iron Co., East St. Louis, Ill., has made recent changes in its official staff necessitated by the death of its president, John C. Nulsen. The following officers have been elected: F. E. Nulsen, president and general manager; A. J. Nulsen, vice president; H. L. Baur, secretary; D. G. Rhoades, assistant general manager, and Henry Berkemeyer, treasurer.

East St. Louis Fire.—The plant of the Western Foundry Supply Co., East St. Louis, Ill., was completely destroyed by fire Oct. 16, with a loss of about $20,000. The company reports, however, that it has arranged to secure materials from eastern interests, and is now able to fill orders promptly for anything in its line. It will build another plant as quickly as possible, and hopes to be in operation therein within the next 60 days.

TWO NEW FURNACES IN THE HANGING ROCK FIELD.

(Special Correspondence.)

Ironton, O., Oct. 23.—Two new furnaces are in prospect in the Hanging Rock iron district. Col. E. J. Bird, of Ironton, general manager of the Bird Iron Co., in association with Morris Sternberger, of Jackson, O.; Eugene Zimmerman, of Cincinnati; L. D. York, of Portsmouth, O., and Ironton iron men, have secured options on the old Little Etna furnace site in Lawrence county, near Ironton, and will erect a large blast furnace equal in capacity to the Big Etna plant of the Marting Iron & Steel Co. at Ironton. The capital stock will be $300,000 and the papers of incorporation will be prepared in a few days.

Charles Peters, superintendent of the Union Iron & Steel Co. plant at Ironton, O., is at the head of a movement to organize a new blast furnace company at Ironton. With him are associated Col. H. A. Marting, of the Marting Iron & Steel Co.; W. A. Murdock, of the Belfont and Kelly mills; C. B. Fowler, superintendent of the Marting plant, and others. The furnace will have a capacity of about 125 tons daily and will be erected in the south side at Ironton.

IN THE HANGING ROCK DISTRICT.

The annual meeting of the stockholders of the Ashland Coal & Iron Co. and the Ashland Iron & Mining Co., were held at Ashland, Ky. last week and the old boards of directors were re-elected. Among the directors re-elected were: Thos. N. Miller, of Pittsburg; John Winslow, of Cincinnati; Col. Douglas Putnam, W. B. Seaton and D. G. Putnam, of Ashland.

The Norfolk & Western is equipping the yard engines on all its divisions with fire-fighting apparatus at the Portsmouth and Roanoke, as rapidly as they can be spared for the remodeling necessary. Six-thousand-gallon tanks will furnish the water supply and each engine is furnished with 100 feet of hose. This will give the company fire protection at all its shops and terminals.

Work on the new cement plant to be erected on the Center Furnace lands near Ironton by Mrs. Nannie H. Kelly and associates, including Morris L. Sternberger, of Jackson, O., and Charleston, W. Va., capitalists, will begin in a few days. The plant will have a capacity of probably 2,000 barrels a day and all the materials used will be mined on the company's property.

D. G. Wright and Henry Klein, of Ironton, O., are each organizing a company to install an electric lighting plant in that city, with a view of bidding for the city contract. It is the intention of both parties to have power houses and cold storage plants in connection with the electrical work.

Oren J. Russell, of Portsmouth, O., has been granted a patent on a nut-lock and has received an offer for a brief option at $25,000, but has decided to solicit the support of local capital and organize a company to manufacture and market the product here. Russell's patent is claimed to have the merit of simplicity and practicability and a number of Portsmouth men have been interested.

L. D. York, of the Portsmouth Street Railway & Light Co., in association with Dudley B. Hutchins, of Washington, D. C., and E. D. Stevens, former local sales agent for the Portsmouth Harbison-Walker Co., have purchased machinery for a one-thousand-barrel cement plant which will be constructed in the vicinity of Portsmouth within the next nine months. The company has secured options on lands in Scioto and Lawrence counties productive of the necessary raw material. It is understood that the capital stock of the company will be about $150,000.

IMPROVEMENT FOR INLAND WATERWAYS.

At the meeting of the Ohio Valley Improvement Association held at Portsmouth, O., last week, Congressman Ransdell, of Louisiana; Congressman Swager Sherley, of Louisville; Congressman Bannon, of Ohio, and other men in public life sanctioned the demand of the association for a national appropriation of $50,000,000 annually for the improvement of inland waterways. During the meeting railway rate legislation and the comparative cost of water and rail transportation were discussed. Stress was laid on the fact that it cost only 80 cents a ton by water to move iron ore from the Superior region to Conneaut and 90 cents per ton for the rail movement over the 135 miles from Conneaut to Pittsburg, while the return rate was 90 cents on coal from Pittsburg to Conneaut and only 45 cents from Conneaut to the Lake Superior ports by water. Many of the prominent manufacturers of the Pittsburg and Ohio river districts were in attendance at the convention, which goes to Wheeling, W. Va., in 1907.

PATENT MERGER AS TRADE RESTRAINER.

An important point in connection with the anti-trust act was recently established when Judge Seaman in the United States circuit court at Milwaukee in the action brought by the Indiana Mfg. Co., Indianapolis, Ind., held that the contract providing that royalties be paid to it for the "wind stacker," a pneumatic device for delivering straw at the tail of the threshing machine, was void. In 1902 the defendant declined longer to pay royalties under the contract, the royalties called for thereunder now aggregating about $175,000, being by stipulation paid into court pending the action. The Indiana company is a holding company owning about 200 patents relating to threshing machinery, which manufacturers were permitted by it to use only on payment of royalties. The plaintiff claimed this right under the patent law, while the defendant set up that the holding company was a combination in restraint of trade, it having gathered together a large number of patents many of which would naturally have been in competition and conflict with one another. The judge in his decision says: "I am of the opinion that the monopoly thus secured, to be immune from the anti-trust act, must be referable solely to the invention under the patent, and that a combination of licenses formed thereunder may create a monopoly which exceeds the legitimate scope of patent privilege, and thus violates the general act referred to."

PITTSBURG ORE CO. EXTENDS.

The Pittsburg Ore Co., organized some time ago with a capitalization of $6,000,000, has been extended and its capital stock increased to $10,000,000. A number of consuming interests are included in the project, and it is stated that holdings of the company, either under lease or in fee simple, contain about 23,000,000 tons of ore already in sight on the Mesabi range. The consuming interests represented include the Cleveland Furnace Co., the Cherry Valley Iron Co., the Salem Iron Co. and the Wheeling Steel & Iron Co. The Brunt, Hobart and Croxton mines were controlled by the original company, to which are now added the Nassua and La Rue mines, estimated to contain about 12,000,000 tons. In addition to supplying the needs of the furnaces interested, the company will also be a large seller of ore.

RECENT ORE DEALS

Mean Much to Iron and Steel Interests of the South.

(Special Correspondence.)

Birmingham, Ala., Oct. 23.—The purchase of additional ore lands by the Tennessee-Republic and Southern Steel companies, heretofore reported, means much in the iron-making industry of this state. The future is being looked after closely. There still remains considerable ore and coal lands out of the hands of iron companies and as the iron and steel age has many years yet to live, it is considered a wise move to prepare for emergencies. The deal consummated by the Southern Steel Co. by which it secured possession of the properties of the Georgia Coal & Iron Co., including some fine manganese ore, places that company in splendid shape. The deal made by the Tennessee-Republic Co., whereby a large tract of ore land was purchased from M. L. Potter, was a fine move inasmuch as the ore is adjacent to property already owned by the company. Other deals are said to be on in this district. Several rumors prevail, one including another merger.

It is given out authoritatively that the Southern Steel Co. intends making some extensive improvements and further developments of properties in this state. A large machine shop will be erected at Gadsden. The company owns over fifty miles of railroad and fifteen locomotives as well as other equipment. It has orders on hand for steel rod, wire and nails which will keep it busy until July 1 of the coming year. It is stated that notwithstanding a heavy freight rate, products of the Ensley plant are being shipped right into Cleveland, O. A meeting of the directors of the Southern Steel Co. is to be held in New York soon, and the matter of making appropriations for improvements and development will then be considered.

Considerable progress has been made on the excavations for the foundations for the steel plant at Ensley (Tennessee Co.). The weather has been seasonable lately for outdoor work and advantage was taken thereof. The contractors are pushing their jobs right along.

Machine shops, foundries and other industries continue to do well in this district. The statement is made that finishing departments at the Birmingham rolling mills (Republic Co.), will resume operations during the next month. Repairs have been made through this mill looking to a long and steady operation. The puddling department of the Birmingham mills has been in operation right along and there has been a demand for all the iron and steel thus worked. The Gate City, Bessemer and Sheffield mills have been doing nicely and have been finding a ready sale for their respective products.

HARVEY PLANT ENLARGED.

Calumet Engineering Works is the name of the company that has been organized to take over the plant and business of the Harvey Foundry & Machine Co., Harvey, Ill. The new company will do a general jobbing foundry and machine shop business, as well as fabricating steel for building purposes; and to engage successfully in this work the plant has been enlarged and modernized. Electric traveling cranes have been installed, and the foundry, machine and structural shops equipped with electrically driven tools and appliances. The plant occupies eight buildings on a tract of land 5½ acres in extent. The capacity of the foundry is 30 tons per day. Gray iron, semi-steel and steel castings will be made. The dimensions of the different departments are as follows: Pattern shop, 40 x 90; pattern vault, 70 x 110; foundry, 107 x 136; foundry cleaning room, 40 x 60; blacksmith shop, 60 x 80; engine room, 36 x 60; machine and structural shop, 100 x 365.

PITTSBURG FOUNDRYMEN'S ASSOCIATION.

The first fall meeting of the Pittsburg Foundrymen's Association was held at the Colonial Annex hotel, Pittsburg, October 8. A dinner preceded the meeting, after which addresses were made by W. H. McFadden, president of the American Foundrymen's Association, J. S. Seaman, of the Seaman-Sleeth Co., S. D. Sleeth, Westinghouse Air Brake Co., D. J. Thomas, the Sterritt-Thomas Foundry Co., and H. E. Field, of Mackintosh, Hemphill & Co. The principal address of the evening was made by J. Francis Burke, congressman from the Pittsburg district.

The election of officers resulted as follows. President, Henry P. Spilker, Sterritt-Thomas Foundry Co.; vice president, H. E. Field, Mackintosh, Hemphill & Co.; treasurer, J. S. Seaman, Seaman-Sleeth Co.; secretary, F. H. Zimmers. The executive committee consists of W. H. McFadden, S. D. Sleeth, E. A. Kebler, B. D. Fuller and J. S. McCormick.

VIRGINIA IRON, COAL & COKE REPORT.

The Virginia Iron, Coal & Coke Co. reports for the fiscal year ended June 30 last, as compared with the previous year:

	1906.	1905.
Total earnings....	$5,088,293	$3,317,562
Total expenses...	4,529,535	2,855,520
Net earnings...	558,758	462,042
Other income....	22,078	54,471
Total income...	580,836	516,513
Int., taxes, etc....	420,392	426,833
Surplus	160,444	89,680

Operating expenses were charged during the year with $258,432 for depreciation and repairs, against $214,281 in the previous year. During the year $531,720 was spent for improvements to owned and leased properties, as compared with $322,439 in the previous year.

In his report to stockholders, President Henry K. McHarg says that so far as the operation of the company's furnaces and ore mines is concerned, the past year in the main was satisfactory. Although the prices of iron have been $1 to $2 a ton higher, practically all the advance was absorbed by the increase in wages and cost of materials. Labor has been especially scarce. The company made 237,113 tons of iron in the last year. The coal mined during the year amounted to 1,264,564 tons and the coke produced to 400,591 tons.

Crucible Steel Meeting.—At the annual meeting of the stockholders of the Crucible Steel Co. held at Jersey City, Oct. 17, the retiring board of directors was re-elected. A number of stockholders requested that the annual dividend on the preferred stock be increased from six to seven per cent and that a statement of the earnings be issued quarterly. It was later announced from Pittsburg that the request was under consideration and would most likely be granted. The board of directors met in Pittsburg on Monday and organized by electing the following executive committee: William G. Park chairman; Frank B. Smith, Herbert DuPuy, A. W. Mellon, J. D. Lyon, Reuben Miller, James H. Park. Frank B. Smith was elected president, Reuben Miller, first vice president; Herbert DuPuy, second vice president; John A. Sutton, third vice president; C. C. Ramsey, fourth vice president; Alexander Thomas, secretary; Julius Bieler, treasurer. The following appointments were also made: Geo. A. Turville, comptroller; John Neely, assistant treasurer, and Chas. W. Rowlands, assistant secretary.

PERSONALS.

George E. Wilson Jr., general manager of the Clinton Bridge & Iron Works, Clinton, Ia., has been nominated for state senator.

F. E. Ross, manager of the Manufacturing, Equipment & Engineering Co., Boston, has resigned to become secretary and treasurer of the Boston Tool Co., Cambridge, Mass.

W. H. Hayes has resigned as superintendent of the Foster Stove Works, Ironton, O., to enter manufacturing on his own account. He has been succeeded by Harry Beals.

George H. Wilkins, heretofore superintendent of the factories of F. E. Wells & Son Co., tool manufacturers, of Greenfield, Mass., has resigned. He is treasurer of the Hunt Mfg. Co.

Dr. Andrew Fleming West of Princeton University has been invited to accept the presidency of the Massachusetts Institute of Technology, as successor of Dr. Henry S. Pritchett.

Henry Caldwell, for some years connected with the Bessemer plant of the Republic Iron & Steel Co., Youngstown, O., has been made night superintendent of the blooming mill.

Leonard Eyke, for some time officially connected with the Pratt Malleable Iron Works, Joliet, Ill., has resigned to take the superintendency of the Terre Haute Malleable Iron Works, Terre Haute, Ind.

H. E. Murdock has been appointed instructor in applied mechanics in the University of Illinois. He is a graduate of the College of Engineering of the University of Colorado, class of 1906.

Howard Morris, vice president of the Wisconsin Central Railway, has retired to become president of the McKenna Process Co., which is engaged in the renewal of old railroad rails, with mills at Joliet, Ill.

N. V. F. Wilson, retiring general manager of the Portsmouth Steel Co., Portsmouth, O., has removed to Pittsburg. He was presented with a handsome gold watch by the employes of the company.

Robert W. Flenniken has resigned as secretary and treasurer of the Cherry Valley Iron Co., Pittsburg, and is succeeded by W. H. Schoen, who is also actively identified with the Pressed Steel Car Co., Pittsburg.

Eugene N. Hunting, C. E., formerly engineer for the Cummings Structural Concrete Co., Pittsburg, is now associated with the General Fireproofing Co., Youngstown, O., as engineer of its reinforced concrete department.

R. J. Gross, a vice president of the American Locomotive Co., has been made a director in place of E. C. Converse, resigned. William M. Barnum, Frederick H. Stevens and Charles Miller have been re-elected directors.

Charles C. Cochran has been appointed assistant professor of mechanical engineering in the University of Kansas. He is a graduate of the College of Engineering of the University of Colorado, class of 1906.

James Gayley and D. G. Kerr, of the United States Steel Corporation, during the past week have been making their annual tour of the lake district, stopping at Cleveland, Lorain and other points on their way to the head of the lakes.

J. T. Bench, master mechanic of the rod mill at the Pueblo plant of the Colorado Fuel & Iron Co., has resigned to accept a position at the Gary, Ind., works. He was recently tendered a farewell reception and presented with a handsome diamond.

Albert J. Smart has resigned as superintendent of the Wiley & Russell Mfg. Co., Greenfield, Mass., a position which he held for over 30 years, and will now engage in the manufacture of taps and dies on his own account at a location not yet decided.

Charles A. Maher, secretary of the National Car Wheel Co., since its incorporation, has been elected a vice president. He was formerly secretary and treasurer of the Maher Wheel & Foundry Co. James D. Rhodes, Pittsburg, has been re-elected president, William F. Bonnell, Cleveland, a vice president and George P. Rhodes, Pittsburg, has been made secretary and treasurer.

Hot Metal Railway.—The new hot metal railway of the Republic Iron & Steel Co., extending from the group of blast furnaces of the corporation at Haselton to the Bessemer steel mill adjoining the Brown-Bonnell plant at Youngstown, O., was tested on Friday of last week, and the regular hauling of the molten metal to the steel mill mixer came on the day following. This improvement will greatly facilitate the operation of the Bessemer plant of the concern and increase the output. Two blast furnaces are now in operation at Haselton and another will be completed inside of two months.

Will Build Foundry.—The Ball Engine Works, Erie, Pa., are having plans and specifications prepared by the Osborn Engineering Co., of Cleveland, for a large foundry.

OBITUARY.

Herman E. Long died Oct. 17 at his home in Pittsburg. He was 63 years of age, and death was due to heart failure. Six years ago he located in Pittsburg to act as secretary of the National Rolled Steel Co.

Thomas W. McCune died Oct. 21 at his home in Wilkinsburg, Pa. He was a civil war veteran and after the conflict engaged in erecting blast furnaces in which business he was associated with well-known steel and iron companies.

George D. Dana, founder, vice president and general manager of the Charter Oak Stove & Range Co., St. Louis, died Oct. 16 at his suburban home near that city. He was born in Cincinnati in 1845, graduating from Washington University and locating in St. Louis, where he has been in the stove manufacturing business for 45 years.

Lewis G. Jenks, who was only recently appointed superintendent of the Republic Iron & Steel Co.'s holdings on the Mesabi range, died suddenly of heart failure Oct. 17. He originally went to Minnesota from Montana and had served the company as head bookkeeper and cashier for a number of years.

Benjamin Howard Warren, a well-known engineer, died Oct. 20 at the Hotel Collingwood, New York, of cerebral apoplexy. Mr. Warren was about 60 years of age. His taste for engineering was formed while he was a cadet at Annapolis and after graduation he became an engineering officer in the navy. In later years he was connected with the Westinghouse Electric & Mfg. Co., leaving the post of vice presidency to go to Chicago to assume the presidency of the Allis-Chalmers Co. Recently he retired from that position and engaged in business as a consulting engineer at 60 Wall street. We was one of the first members of the Engineers' club, and was also a member of the American Society of Mechanical Engineers.

Selling Machine Tools.—Owing to the fact that its plant, real estate, etc., were recently purchased by the Standard Roller Bearing Co., of Philadelphia, the Pennsylvania Iron Works Co., Fifty-second street and Lancaster avenue, of that city, is obliged to move immediately to other quarters, and is offering its equipment for sale. Hill, Clarke & Co., of Boston, have purchased the larger part of the machine tool equipment which they are now offering for sale. Part of this equipment is a 120-inch planer, quite an unusual size to be so offered.

DIFFICULT CASTINGS MADE BY GREEN MOLDERS

A STUDY OF THE CONDITIONS IN MILWAUKEE

One of the most startling developments of the present strike of the iron molders is the fact that a skilled molder is by no means necessary for the production of even the most difficult casting. With proper supervision, and a little instruction, boys, green men, or apprentices have done work which it was formerly deemed possible to produce only with molders of long experience and great skill. And more than this, the boys and green men, the boys especially, as a rule, are, according to the employers, doing the work better and more rapidly than the union molders who preceded them.

The reasons ascribed for this last fact are the greater interest taken in their work by the boys, their ambition to learn quickly, and the fact that they will do as they are told. The experienced molder will, in many cases, resent instruction by his foreman, and will proceed along lines, which, in his judgment, are better or easier.

In no city in the country have these facts been demonstrated more thoroughly than in Milwaukee. The fight between the foundrymen and the molders has been conducted with great bitterness, and all the known methods of modern industrial warfare have been employed on both sides. The foundrymen, with few exceptions, who made no fight whatever, and who employed a very small percentage of the men involved, have been a unit in resisting the demands of the men. On the part of the molders, up to within the past couple of weeks, there have been no defections. The employers have been compelled to get along as best they could with such help as could be picked up on the street and imported from other cities, with high school and technical school students, and with the few apprentices who refused to go out with the men. How well they have succeeded will be shown later.

A member of the editorial staff of THE IRON TRADE REVIEW recently spent several days in Milwaukee, visiting a number of the large foundries, and making a close study of the conditions in that city. The progress which had been made since the inauguration of the strike was remarkable. Milwaukee is a city in which big things are done. The largest and most complicated types of machinery are built there. Steam engines, whose capacity runs into thousands of horsepower, are built, as are pumps of high duty and large capacity. The various parts of these machines are castings of the most difficult type, with extremely intricate core work. Yet, the writer found apprentices in their first year working on Corliss engine cylinders, high school students molding engine frames, laborers working on the

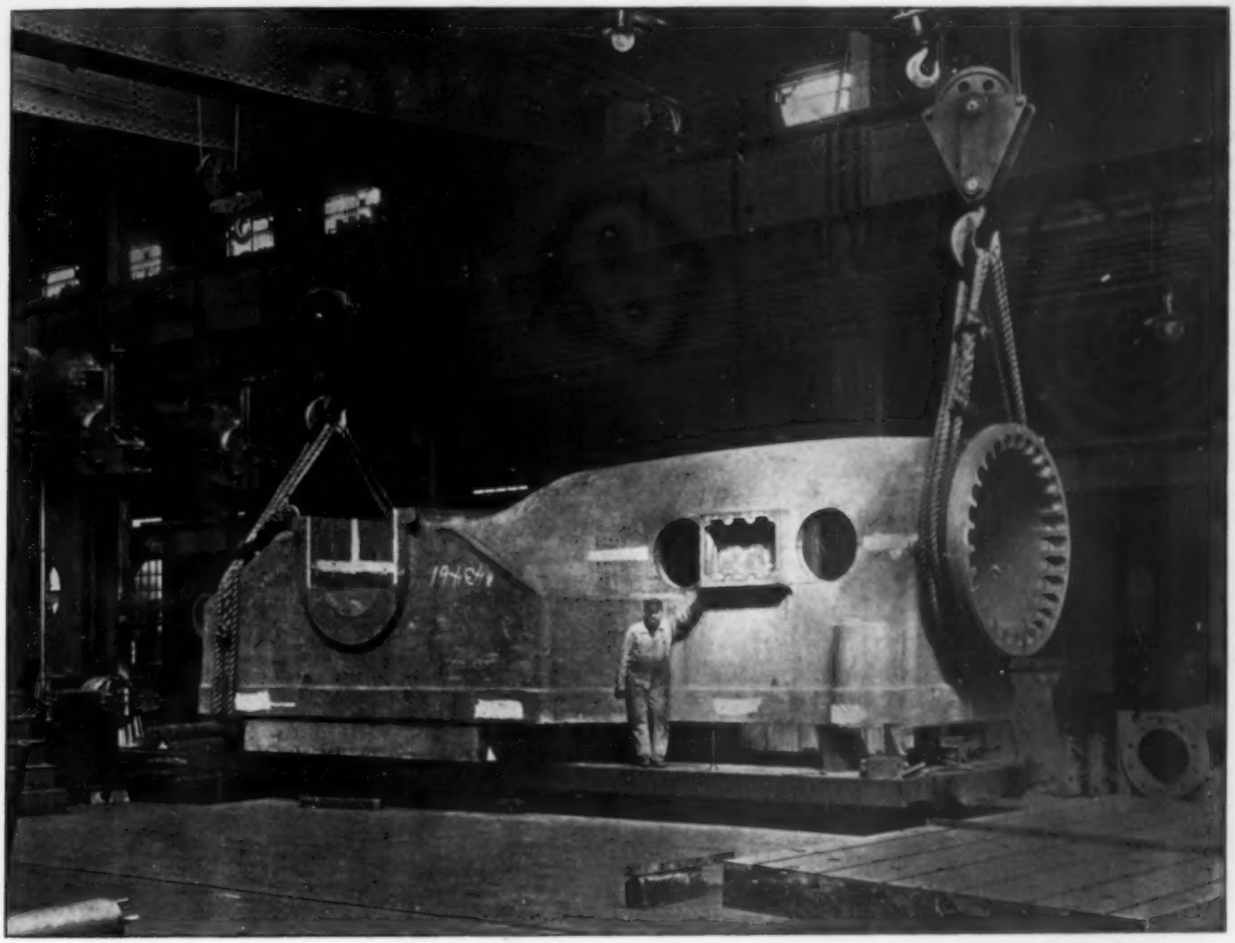


FIG. 1.—BED FOR BLOWING ENGINE FOR CARNEGIE STEEL CO.
Weight, 104 tons. Made by four apprentices, two serving their third year, and two their first. Time required, about 1,000 hours.

mold for a 16-foot rope-drive sheave, and other startling innovations. One of the two largest gray iron castings ever poured in America, weighing 104 tons, was made by four apprentices. They made the mold in 20 per cent less time than the four union molders who were on the job before them. The foreman states that not only was the job done more quickly, but better by the boys.

The method pursued in all of the shops was practically the same. The foreman would instruct the new man in the making of a piece, and start him at work, and then go to the next man. He would visit each man at frequent intervals, instructing him in regard to difficult operations, and finally making a rigid inspection of the mold before it was closed. As far as possible, the new men were kept on repetition work, until they had learned to handle their tools. In shops where a great amount of duplicate work is turned out, this was very easy. It was a different problem, however, in those places where only a few castings were made from each pattern. The men were then kept on work of the same nature as nearly as possible. As they became more proficient, they were gradually broken in on the more difficult castings, and required less and less attention from the foreman. In many cases, the piece work system was instituted as early as it was possible to do so and yet be fair to the men. This was a most potent force in bringing the output up, and resulted in a number of castings from many of the men which was greatly in excess of that obtained from any one man before the strike. In fact, many employers state that, with the removal of the limitation of output, they are able to obtain as many castings as before the strike, with from 75 to 85 per cent of the men.

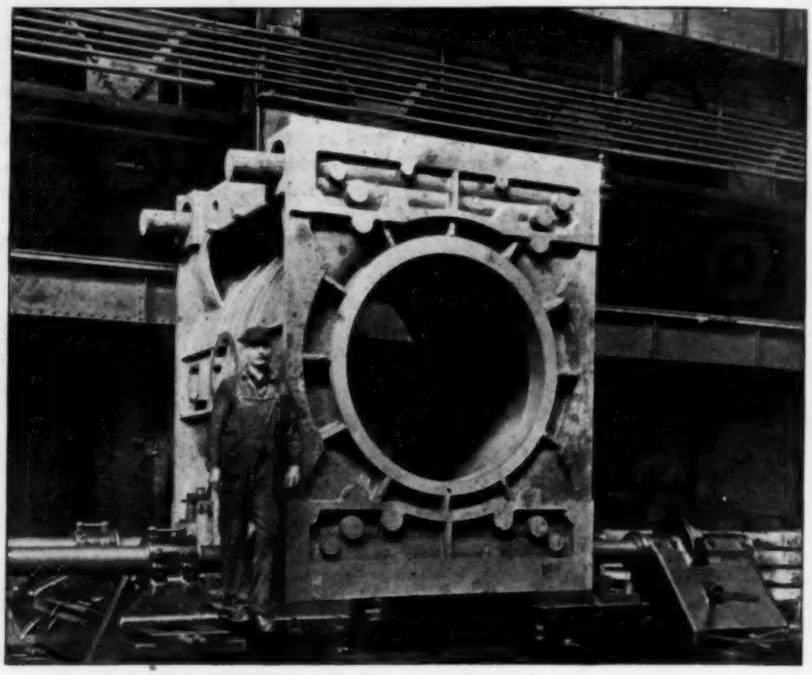


FIG. 3.—88-INCH HIGH PRESSURE CYLINDER FOR BLOWING ENGINE.
Made by helpers, who started molding four months ago. Time said to compare favorably with union molders' time. Weight of casting, 68,000 pounds.

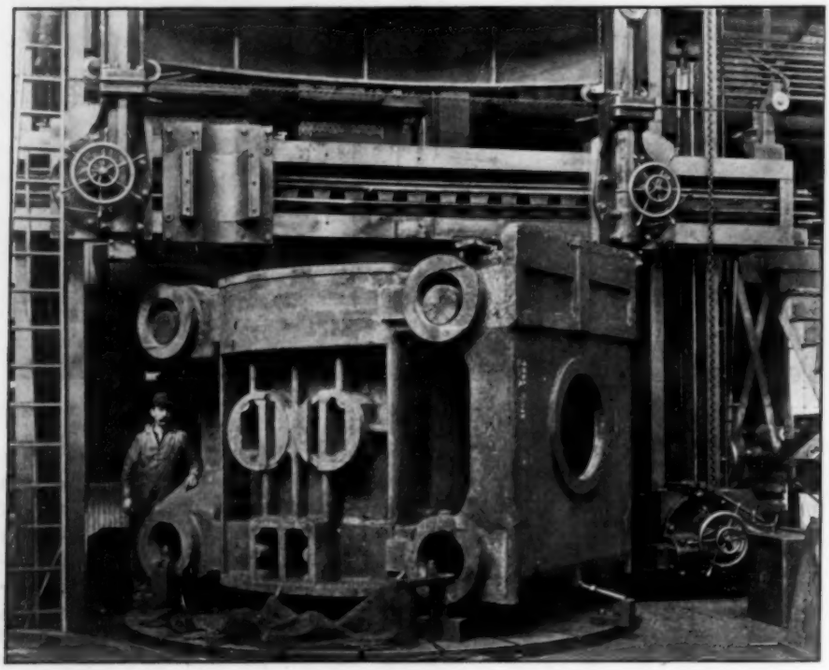


FIG. 2.—78-INCH HIGH PRESSURE CYLINDER FOR ROLLING MILL ENGINE.
Made by two apprentices serving their third year. Weight of casting, 84,000 pounds.

Some examples of the work done in the various shops may now be given.

Allis-Chalmers Co.

The Allis-Chalmers Co. is using all kinds of help in its three foundries. A few molders returned to work shortly after the strike was declared; these are at the West Allis and Reliance works. High school students, regular apprentices, handymen, unskilled men from the street and foreigners are all found at work in the various plants. At the Reliance works, the writer saw two men, formerly laborers, working on the mold for a rope-drive sheave, 16 feet diameter by 35 inches face, with 10 grooves. The mold was being made in loam, and one exactly similar had been made by these same men in 18 hours. Two experienced molders had done the same work in about the same length of time before the strike.

Two apprentices, one in his third year, and one who started work since the strike, made a band mill frame, weighing over three tons, in about 100 hours. The mold is a rather difficult one, made in green sand and requires considerable core work. Two union molders made the same mold in about the same time before the strike.

A frame for a 12 x 24-inch Reliance

engine was made by two high school students in 50 hours. Up to three months ago neither of these boys had ever been in a foundry. Their combined wages per day amount to three dollars. Before the strike, two molders made the same casting in 40 hours; the labor cost was much higher, however, despite the shorter time, due to the higher pay of the molders.

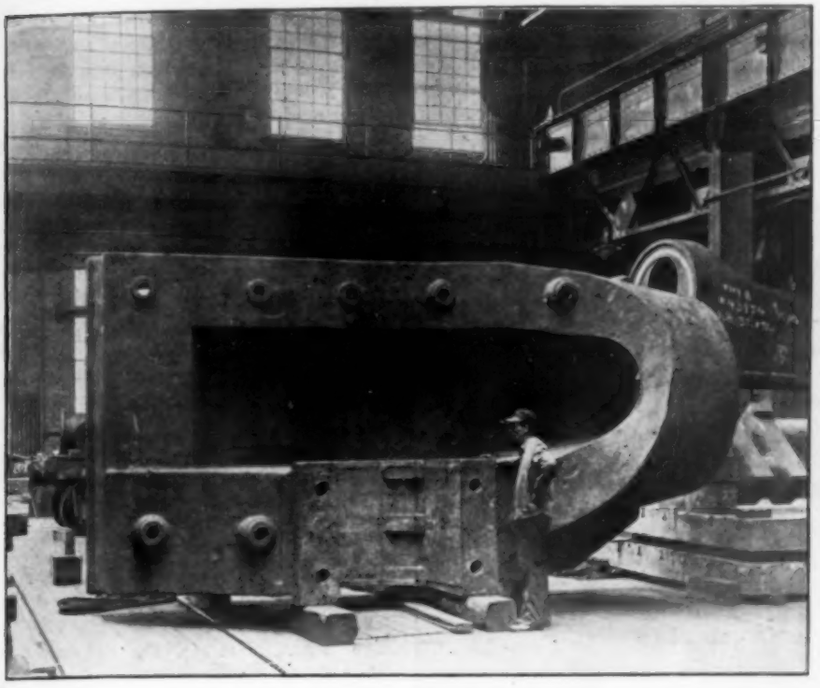


FIG. 4.—50-INCH HEAVY DUTY ENGINE BED.
Made by handy men, who did their first molding 3½ months ago. Time stated to be about the same as was required by the union molders. Weight of casting, 75,250 pounds.

A man professing to have had some experience as a molder was at work on engine cranks. While the actual figures as to number made and time consumed were not available, the foreman stated that the work was done better and more cheaply than by the old hands. A man, who three months ago, had absolutely no experience, was making pulleys as large as 10 feet by 36 inches. The molder before him made three each week. At the start the green man made one. His output now is about 2 2-3 per week, and spurred on by the offer of an increase in pay when he attains the output of the former workman, he bids fair to soon exceed the old rate.

At the West Allis works, a 78-inch cylinder was seen, which weighed 42 tons when cleaned. It was made by two apprentices in 794 hours. A similar cylinder was made before the strike by two molders in 948½ hours. These are the actual figures taken from the foreman's books. The greatest achievement of the whole strike, though, was the casting of the bed for one of the blowing engines for the Carnegie Steel Co. The mold for this was made by four apprentices, two in their third year, and the others in their first and second. The finished castings weigh 104 tons and the first was made by four experienced molders and their helpers in 1347½ hours. The apprentices, with the same number of helpers, made the second casting in something like 1,000 hours, and did a better looking job. Many other examples might be cited from this particular foundry, but space forbids. Suffice it to say that, with about 75 per cent of the men, but few of them experienced, the output ranges from 85 to 95 per cent of normal and the percentage of lost castings is not any higher than before.

The Fred M. Prescott Steam Pump Works.

The Fred M. Prescott Steam Pump Works, located in West Allis, was probably hit harder by the strike than any other concern. At the beginning of the strike all the molders went out, leaving five apprentices in the shop. These apprentices continued to work satisfactorily until an attempt was made to put on handy men and helpers. They absolutely refused to work with these men, and were promptly discharged. The only person left in the shop was the foreman, who instructed green men as they were hired. At present the foundry has no difficulty in keeping the machine shop supplied with castings of uniformly good quality. The output is almost normal, and the percentage of lost castings is no higher than normal. The photograph herewith gives instances of work done by the various new men. No. 1 is the cylinder of a 16 x 18-inch air pump and weighs 2,400 pounds. This was made by a handy man, who began work in August, 1905, as a molder's helper. Previous to that time, he had no foundry experience. After the apprentices went out, he was started on molding, using a green hand as a helper.

The same man and his helper also made castings Nos. 3 and 4. No. 3

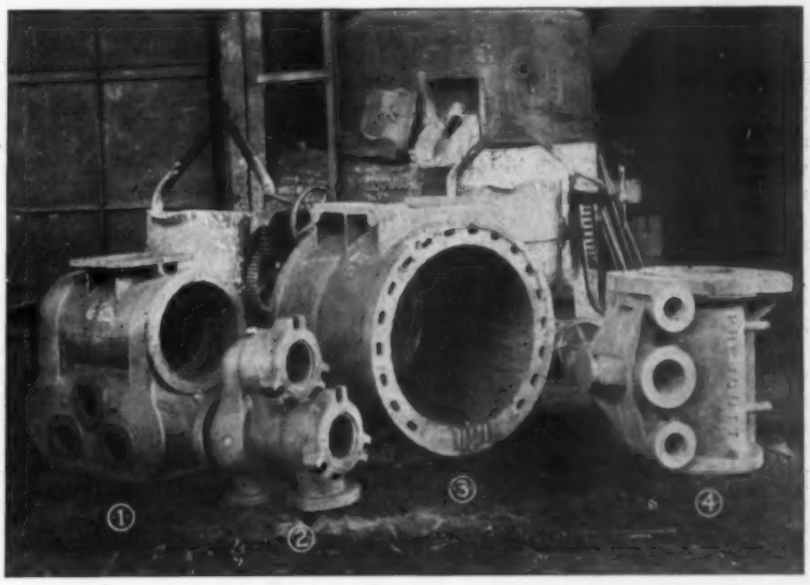


FIG. 5.—CASTINGS MADE AT THE FRED. M. PRESCOTT STEAM PUMP WORKS.
Made by helpers who started molding since the strike was declared.

is a 34 x 24-inch steam jacketed pump cylinder, weighing 4,100 pounds. As may be readily imagined, the core work on this cylinder is quite intricate, giving a good opportunity for spoiling a casting; yet, not a single casting made by this man or his helper has been lost. No. 4 is a 13 x 24-inch Corliss valve steam cylinder and weighs 2,000 pounds. Castings Nos. 3 and 4 were made by these two men in two working days.

FIG. 6.—MALLEABLE CASTINGS MADE AT THE STOWELL FDY. & MFG. CO.'S PLANT.

Casting No. 2 is known at the Prescott works as a "pot form" valve chamber and is used on pumps that operate against heavy pressures. Each pot weighs 800 pounds. The molds are made by a man, who previous to the strike, had nine months' experience as a molder's helper on plain gray iron work. Before that time, he had never been inside a foundry. One of these pots is made every day by this man.

Other work being done in this shop comprises barometric condenser column pipes, and U discharge pipes for pumping engines. The former are being turned out by a man who, before the strike, was a laborer cleaning up the foundry, occasionally working as a molder's helper. The pipes are 12 feet 4 inches long, 20¼ inches inside diameter, 21¾ inches outside diameter and weigh 3,000 pounds. The time required for molding and casting is a day and a half with an absolutely green helper. These are characteristic of all the work done in the shop. The men are all green and have obtained almost all their foundry experience in the Prescott plant from instruction by the foreman.

The Stowell Fdy. & Mfg. Co.

At the works of the Stowell Foundry & Mfg. Co., South Milwaukee, the problem facing the management was a trifle different than that with which the other foundries had to contend. The principal product of this company is light malleable iron castings, whereas in the other places visited, heavy gray iron castings principally were made. The weight of any single casting made by the Stowell Foundry & Mfg. Co., with the exception of grate bars, rarely exceeds ten pounds. Hot air registers, small sheaves, rings, buckles, chain belt links and castings of the type shown in the illustration, Fig. 6, comprise the principal output of this concern. A great deal of its work is done on molding machines, though there is considerable floor work done also. Although the castings made are small, some of them are very mean pieces to mold, as may be judged from those shown in the illustration. The link belt chains, for instance, have to be accurate within a very close limit, both at the hook and rod end, in order to mesh with the link preceding and following it. A slight shifting in the position of the core at the hook end, or careless drawing of the pattern, causing the rod end to be enlarged, would ensure the rejection of the casting. Nevertheless, these are made successfully in large quantities by green foreigners.

At the commencement of the strike, 140 men were employed in the shop. These have been replaced by 113 handy men and foreigners. The output of these 113 men is stated to be fully 95 per cent of the 140 men formerly employed. Many of these men are now working on piece work.

The Bucyrus Co.

The Bucyrus Co., also located in South Milwaukee, operates a steel foundry in addition to its gray iron foundry. The foundry superintendent, at the beginning of the strike, devised a special stripping plate molding machine, which enables a smaller number of men to turn out a larger number of castings than was deemed possible under the former conditions. The total number of men employed in the foundry at present is about 80 per cent of the number that went on strike. The output of work in the iron foundry is stated to be about 90 per cent, and in the steel foundry 125 per cent of normal. The increase is laid to the introduction of the machines and the removal of the limitation of output. The principal type of men employed is handy men and apprentices of very limited experience. The castings made are of various types, ranging from journal boxes of a few pounds weight up to hoisting engine drums and engine beds weighing as high as five tons. Due to the exigencies of the strike, many molds are made on machines which were formerly regarded as a strictly floor proposition. Journal boxes and engine cylinders are two of the castings so made.

The Filer & Stowell Co.

The Filer & Stowell Co., builder of steam engines and saw mill machinery, has obtained a number of molders of more or less experience from other cities for making the more important and heavier castings, while foreigners, principally Italians, are engaged on the lighter and relatively small castings. This company has about 90 per cent of its usual force employed, but is only turning out about 80 per cent of the usual amount of work. It has installed a large number of molding machines, which are operated by the Italians. The principal drawback of these men is their inability to speak or understand English, with the consequent difficulty of properly instructing them. Probably, as a result of this, the percentage of spoiled work is higher than it otherwise would be, it amounting at the time of the writer's visit to about six per cent. Under normal conditions, not over two per cent of the castings poured are lost. The writer saw large engine cylinders and other difficult castings, both in the foundry and in the machine shop, but it is hardly fair to class this with the work done in some of the other shops, as these difficult castings were in the Filer & Stowell Co.'s plant made by journeymen non-union molders, whereas in other places visited, they were made by helpers, apprentices and green men.

A GREAT EDUCATIONAL PLANT DEDICATED.

NEW ENGINEERING BUILDING OF THE UNIVERSITY OF PENNSYLVANIA

Erected at a Cost of One Million Dollars.—Equipment for Instruction of Mechanical, Electrical and Civil Engineering Students.

The new building of the engineering department of the University of Pennsylvania was dedicated Friday, Oct. 19. The structure, which was beautifully decorated, was opened for private view all day to the guests of the university, and at half past twelve luncheon was served in three of the large rooms on the third floor, some 2,500 people being present.

The dedicatory exercises were held at two o'clock in the large assembly room on the second floor. Upon their arrival at the university, the representatives of foreign countries and the delegates from the various schools and scientific societies appeared in the library room on the second floor and presented their credentials to Dr. Josiah C. Penniman, dean of the college. The seniors of the civil and mechanical engineering courses acted as ushers and during the day escorted the guests of the university through the building and explained the uses of the various rooms and apparatus.

At two o'clock the candidates for honorary degrees, the official representatives of foreign countries, of schools and of scientific societies, the provost, vice provost and the trustees proceeded in a body from the library to the auditorium. After the invocation by Rt. Rev. Ozi W. Whitaker, the building was formally presented to the university by Emlyn L. Stewartson, of the class of 1884, on behalf of architects, Cope & Stewartson. In a brief address the provost, Charles Custis Harrison, accepted the keys of the building on behalf of the trustees, taking occasion to extend thanks to Profs. Spangler and Marburg for their assistance in studying out the details of the structure, to the architects, to the contributors making the building possible, to the workmen who labored thereon and to the vice provost, Edgar F. Smith.

Arthur L. Smith, of the class of 1878, chairman of the dedicatory committee and a trustee of the university, then asked the provost to confer the degree of doctor of science upon the following distinguished men:

Marie Michel Henri Vetillart, a brilliant French engineer famed for his work in improving numerous European ports.

Alexander MacKenzie, chief of engineers of the army, and a prolific and experienced writer and investigator.

Charles Whiteside Rae, rear admiral and engineer-in-chief of the navy.

John Fritz, a noted engineer to whose inventive genius the United States largely owes its present position in the steel industry.

Mansfield Merriman, instructor of civil engineering at Yale University for three years, and professor at Lehigh University for 28 years.

Samuel Mathews Vauclain, whose contribution to the development of the steam locomotive has been most important.

Frederick Winslow Taylor, president of the American Society of Mechanical Engineers.

Frederick Pike Stearns, a member of the board of consulting engineers of the Isthmian canal, and president of the American Society of Civil Engineers.

Samuel Sheldon, electrical engineer, physicist and educator and president of the American Institute of Electrical Engineers.

Henry Wilson Spangler, professor of mechanical and electrical engineering at University of Pennsylvania.

Ramon Ivarrola, representative of the Austrian government at the dedication.

Edgar Marburg, professor of civil engineering of the University of Pennsylvania.

After the presentation of these degrees an oil portrait of the late J. Vaughan Merrick was formally presented to the department on behalf of Mr. Merrick's family by Joseph L. Jones, and accepted by the vice provost.

Frederick W. Taylor, president of the American Society of Mechanical Engineers, then spoke at considerable length on "A Comparison of University and Industrial Discipline and Methods." His address was a discussion of college education from the view point of the employer on present university tendencies. He was followed by Dr. Alexander C. Humphreys, president of the Stevens Institute of Technology. He spoke on "The Engineer as a Citizen." The present commanding position of this country in the industrial field, he declared, was largely due to the efficient preparatory work done by our engineering schools. He stated that those who have prospered most in acquiring wealth from industrial undertakings have, as a class, failed to show their appreciation in a practical way. He made a plea for the practical engineer to offer some valuable suggestions as to what a college education should include outside of that now generally covered in the four years' course.

In the evening the special guests were entertained at a dinner given at the Union League by the general committee and the alumni of the civil and mechanical engineering departments.

DESCRIPTION OF THE BUILDING.

The word "luxurious" is seldom associated with the temples of toil which serve as college laboratories, but "luxurious" is the only adjective which will properly fit the new engineering building of the University of Pennsylvania. The building when completely equipped will cost about $1,000,000, or more than $1,600 for each of the 600 students now enjoying its magnificent appointments. There are spacious marble halls extending hundreds of feet, offices fit for a railroad king, and lounging rooms as inviting as the upholstered alcoves of a metropolitan club, but physical comfort has not been the chief end of the builders' plans. For the student in the shops and the instructor there are the far greater luxuries, abundant light and air, convenience of arrangement, a minimum of dirt, and every imaginable piece of apparatus that might be needed in study or experiment. There is a convenient place for everything and provision for keeping everything in its convenient place. Every detail is eloquent of care and forethought, and it is evident that neither time nor expense has been spared to make the whole a model educational plant.

The new building is situated at the corner of Locust and 33d streets, West Philadelphia, and is the largest of the University group of seventy buildings. It has a length of 300 feet and a depth of 210 feet at one end and 160 feet at the other. It is of fireproof construction, the exterior being of dark red brick with limestone trimmings. There are three stories, and a basement covering about one-third of the area occupied by the building, the total floor

FIG. 1.—FORGE SHOP.

FIG. 2.—THE MATERIAL TESTING LABORATORY.

space being 128,000 square feet.

The structure encloses two large courts covered with a glass roof on the ground floor which is used for the iron and wood working shops. This arrangement gives abundant light in all parts of the building. For artificial illumination, both incandescent and arc lights are used. The drafting rooms are especially favored in this respect, the largest of the group having 17 arc lamps so arranged that the tables are almost exempt from shadow effects.

Heat is derived from the exhaust steam of the engines, each room being heated by coils supplied with low-pressure steam from the central station. Ventilation is by electrically driven fans located in the attic and the basement. The system is divided into sections, each with separate fans and tempering coils, so that portions of the building not in use need not be supplied with the full volume of fresh air. The fans may be controlled from any room in the building.

There are two main entrances in the 300-foot front, both opening into the main hallway, which runs the entire length of the building with broad stairs at the ends. Beside the entrances between the main hallway and the street are the offices of the heads of the departments, the east end of the building being devoted to the department of civil engineering and the west end to the department of mechanical engineering.

The Lesley Cement Laboratory.

The Lesley cement laboratory for testing cements, mortars and concretes occupies the southeast corner of the main floor. Funds for the equipment of this laboratory were supplied by Robert W. Lesley, of the class of '71. The laboratory is divided into two parts by a paneled partition, the larger of the two rooms being used for instruction in the standard tests of cement and the smaller being equipped for concrete work and for research. The equipment is of the best throughout, including slate-topped mixing tables, lockers and drawers, balances, storage tanks, immersion tanks, damp closets, burettes for measuring, mixing water, etc.

Geodetic and Hydraulic Laboratories.

The geodetic laboratory is a room in the basement. It contains tables, lockers and a full assortment of instruments used in engineering practice, including theodolites, engineers' transits, precise levels, dumpy levels, wye levels, plane tables, compasses and sextants. The apparatus is stored in a series of closets provided with glass doors, each accommodating a complete outfit for a separate surveying party.

The hydraulic laboratory covers a floor space of about 5,300 square feet and occupies a room in the basement, another directly above on the ground floor and a third smaller room on the second floor. The equipment includes a circular steel pressure tank, 5½ feet in diameter, extending from the basement floor to the second story ceiling. The piping is so arranged that the tank may be brought under a great variety of pressures to study the flow of liquids through orifices of various forms, through pipes, etc. The discharge from the lower orifice of the pressure tank passes into one of a pair of weir tanks constructed of reinforced concrete. These tanks are each 34 feet long and 5 by 5½ feet in cross section. The discharge from the weirs leads directly to a pumping reservoir of a capacity of 23,000 gallons. Scales and tanks are provided

FIG. 3.—ELECTRICAL TESTING LABORATORY.

so that water from the different apparatus may be weighed before passing to this reservoir. There are three Worthington 4-inch, two-stage pumps, each driven by a 35-horsepower electric motor having a wide range of speed. The pumps may be operated singly or in series. Important features of the equipment in this laboratory are a standpipe 12 inches in diameter and 65 feet high and a water-tight, 8-inch tubular well 110 feet deep. Gutters and supply pipes are within easy reach of all parts of the floor. The laboratory also contains a 9-inch turbine and a 12-inch reaction wheel, suitably mounted to permit of efficiency tests and an assortment of water meters and a great variety of other apparatus.

The Mechanical Laboratories.

The total floor space devoted to mechanical laboratory purposes is 14,000 square feet located on the ground floor. The apparatus is divided into groups with corresponding arrangement of floor space. The laboratory may be divided into the following departments: Standard room, boiler plant and testing floor, producer room, gas engine laboratory, heating room, refrigerating room, steam laboratory, material testing, dynamometer laboratory and hydraulic laboratory.

The apparatus installed is varied in type, each piece having been chosen with regard to its suitability for a certain experiment or series of experiments. The steam, exhaust and water piping is carried overhead and power outlets are distributed throughout the laboratory providing for the various drives. Where machines of similar types are run side by side one is usually provided with an individual electric motor while the other is driven by belt from a shaft. Suspended arc lamps furnish most of the artificial light but there are outlets at all convenient points for the connection of portable lights. Three runways, with travelers and chain hoists provide facilities for handling heavy machine parts.

FIG. 4.—ONE OF THE DRAFTING ROOMS.

The students in the various shops are under a discipline much resembling that of a well-managed industrial plant. A printed pamphlet tells the student what to do; he has a number corresponding to that of a set of tools, a locker and the pieces of standard apparatus which he uses. In nearly all cases he works alone. He is obliged to rig up his own apparatus and to do all of the work of any given operation himself. He is governed by a system of time control as in the latest shop practice, the average time for a given operation being determined beforehand, and everyone being obliged to adhere to the schedule.

The boiler testing plant consists of a 100-horsepower Roberts water-tube boiler, a Wainwright feed heater, a Worthington duplex feed pump and the necessary weighing tanks, etc. The plant can carry a pressure of 250 pounds per square inch, the steam line leading over the testing floor and into the steam main. The testing floor is an iron plate floor 13 by 12 feet, with steam, water and exhaust outlets at disposal. A cooling tower is provided.

The gas engine equipment includes four gas engines of various types and capacities, all run on city gas. There is space for an engine to be run directly from a suction producer to be installed in a lean-to of the building.

To the right of the gas engine department are three testing rooms for test-

FIG. 5.—FOUNDRY.

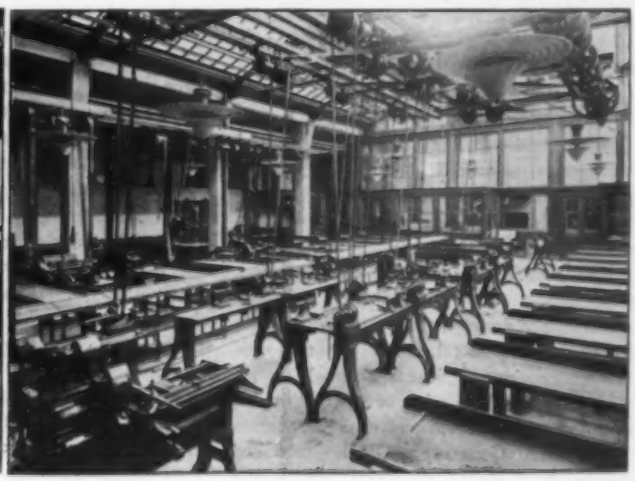


FIG. 6.—PATTERN SHOP.

ing heating and refrigerating apparatus. Along one side of the main room is a row of steam engines, condensers, injectors, etc. This is the steam laboratory. Its equipment includes steam engines of all standard types, and two steam turbines.

Several injectors, a pulsometer and an indicator testing apparatus are arranged along the wall behind the engines and there is room for additional equipment. To the right there is a two-stage, belt-driven air compressor and an air blower, each with its electric motor. In this room there are also six testing machines.

In the dynamometer division is a Webber dynamometer, a Flather dynamometer and a Thurston railroad oil tester. These machines are belt-driven, the power for the group being furnished by a 10-horsepower motor. A rope drive arranged for testing purposes is to be installed in this division. In an adjoining space are tanks and apparatus for testing gas meters and for water meter calibration. Near the gas engine row are two Ericsson hot air engines and a Deming motor-driven triplex pump.

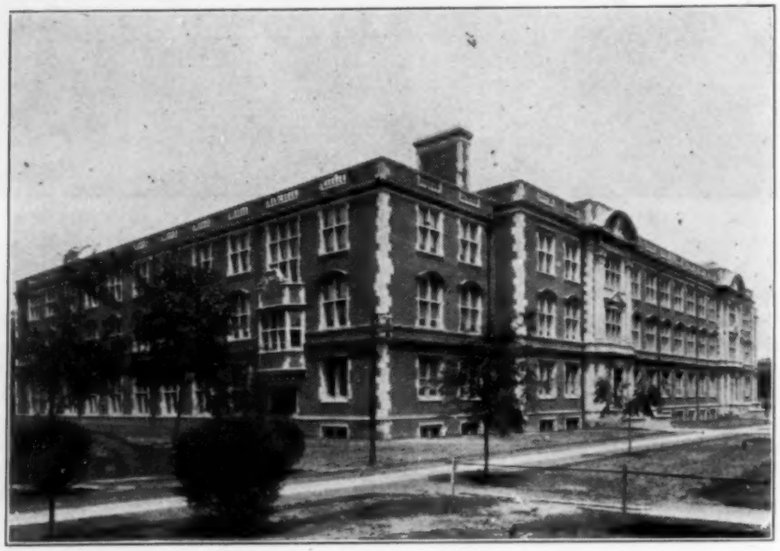


FIG. 7.—NEW ENGINEERING BUILDING OF THE UNIVERSITY OF PENNSYLVANIA.

Electrical Engineering.

Five rooms in the building are used for practical work in electricity. A quiet room in the corner of the building on the first floor is to be devoted entirely to fixing authoritative standards. Storage batteries in the basement immediately below will furnish currents of the requisite intensity and volume. In the instrumental laboratory the men encounter their first practical work. This is furnished with every imaginable appliance for the various electrical measurements. Concrete pillars, provided for each student, eliminate all vibration which might interfere with the proper reading of the delicate instruments employed. Throughout this laboratory the wiring is run below the floor level in concrete ducts covered with rolled steel floor plates. The switchboards are built of white Italian marble.

From a practical point of view perhaps the most important of the electrical laboratories are those devoted to direct-current and alternating-current machines, these two being almost parallel as to arrangement and equipment. In the direct-current and alternating current dynamo rooms the visitor will find a full equipment of motors and generators for all services.

Two rooms with dull black walls and labyrinth entrances are fitted for photometric work. Each room has a photometer with a three meter track and universal rotating stand. All types of lamps may be tested here.

The Shops.

About 12,000 square feet of space upon the ground floor under glass roof is used for shop work. This space includes the foundry, lumber and iron rooms, six offices for instructors and a central tool room where all tools are stored and issued upon presentation of a numbered check. The wood shop is equipped with fifteen benches, eight turning lathes, one mortise machine, one tenon machine, a wet tool grinder, a planer and trimmer knife grinder, a band saw setting machine, a band saw filing machine and filing stands for hand and circular saw sharpening.

The pattern shop contains fifteen benches, eight lathes of various sizes and makes, two band saws, a tilting table jig saw, a jointer and a surface planer, a combination rip and cross cut saw, a universal sanding machine, an Oliver trimmer, a Fox trimmer, a motor-driven wet tool grinder, an electric glue heater and gluing tables.

In the foundry, which to a visitor from the industrial world seems to be almost too painfully neat, there are ten molding troughs—one for core making—coal and sand bins, two brass furnaces, a 22-inch Colliau cupola, a core oven, pickling vat and a bedding floor enclosed in concrete walls. A 5-horsepower motor direct-connected to a fan supplies the blast. A swing post crane serves the brass furnaces, the cupola and part of the molding floor.

The iron shop has eight benches, with many vises, lathes, including one spinning lathe, drill presses, a power hack saw and a tool grinder, all driven from a line shaft actuated by a 15-horsepower Weston steam engine. The equipment of the machine shop includes a sensitive drill press, a universal cutter grinder, a universal lathe and planer tool grinder, a twist drill grinder, three speed lathes, four engine lathes, two quick change gear engine lathes, a 30 x 12-inch Lodge & Shipley high speed engine lathe direct-connected to a motor with apron control a Garvin universal milling machine driven by a variable speed motor and with power feed in every direction, a Kelley shaper, a Walcott motor-driven shaper, a Whitcomb planer, a Gray spiral geared planer with three heads, a Warner & Swasey screw machine, an iron erecting floor, and a swing post crane.

Lecture and Assembly Rooms, Library.

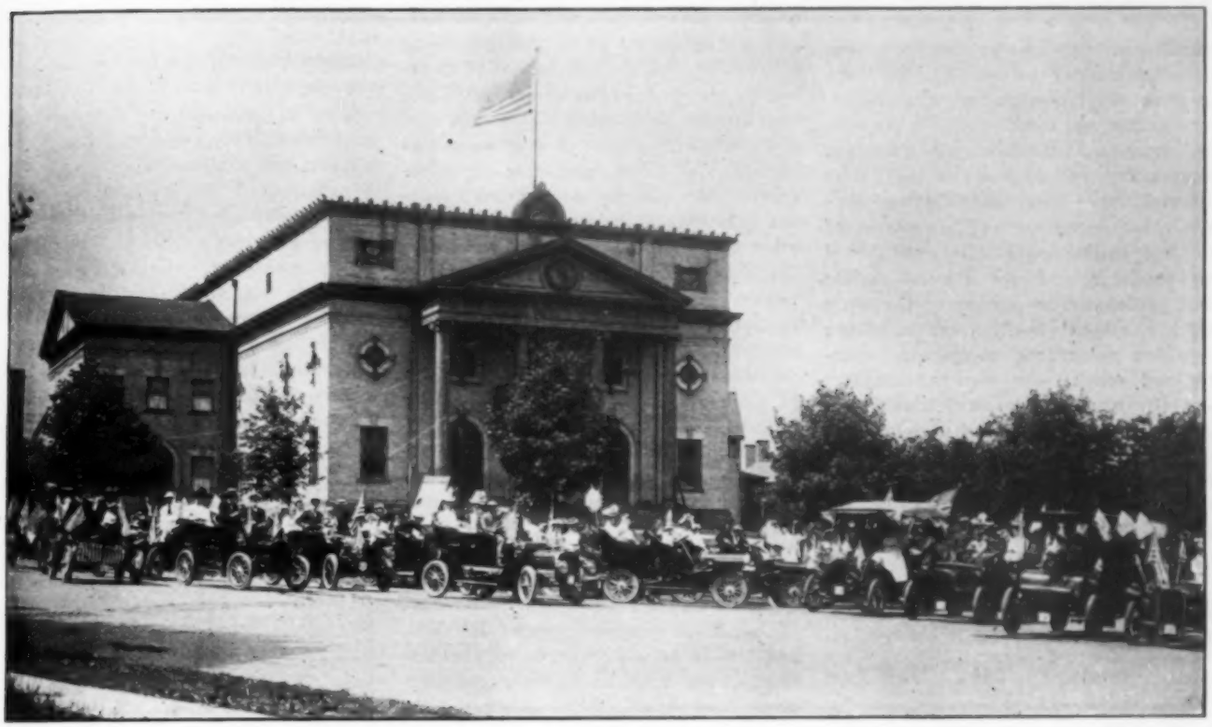
A large assembly room occupies the space on the second floor between the two central courts of the building. A room of equal size directly above is set aside for the use of students. It will be furnished with easy chairs, tables, etc. On the second floor a library and reading room occupies the space above the offices at the front of the building. The library and stack will hold about 20,000 volumes. On each side of the library are series of recitation and lecture rooms, which are continued along both ends of this floor. There are also a number of instructors' rooms along the south side of the courts.

In the east wings on the third floor spacious rooms have been set aside for engineering museums. The entire north end is given up to drawing rooms of which there is one for each class, and an individual table for each student. There are tables for 101 freshmen, 93 sophmores, 75 juniors and 46 seniors. The diminishing numbers represent the gradually thinning ranks of a class as it encounters the arduous campaigns of each succeeding year. For it is a matter of record that of the freshmen which enter with high hopes and abounding courage fully half fall by the wayside before they finish the last round of the shops.

VANDERGRIFT'S AUTOS.

Remarkable Prosperity of Model Industrial Town Evidenced by Workingmen's Cars.

Probably no other town of its size anywhere can muster the number of automobiles owned in Vandergrift, Pa., the American Sheet & Tin Plate Co. town. Certainly no other community of 7,000, and with a population almost entirely of workingmen, can equal its record in this line, as well as in many other directions of prosperity and culture. The photograph presented herewith shows, in its pretty setting of trees, the Casino, or assembly hall, at Vandergrift. It was taken on July 4, when only about half the automobiles of the place could be assembled for the occasion. When it is considered that almost twice the number pictured are owned in the little city, most of them by the workingmen themselves, the results of this now famous experiment in the establishment of a model industrial community are apparent.



SOME OF THE AUTOMOBILES AT VANDERGRIFT.

The story of Vandergrift is known throughout the world to those interested in industrial communities. At first as an interesting experiment, and later as a convincing example, it has been written about so frequently that its chief features are familiar to everyone interested in such subjects. However, in view of what is about to be done at Gary, Ind., where a similar undertaking is going forward on a gigantic scale, it may not be out of place to recount briefly the history of this "workingmen's paradise," a town built upon a plan designed to secure to its inhabitants attractive surroundings and a maximum of comfort and happiness.

In 1895, the Apollo Iron & Steel Co., now part of the American Sheet & Tin Plate Co., finding it desirable to build a new plant, decided also to lay out a town which would be so far superior to the ordinary industrial settlement that it would attract a high class of workingmen. A beautiful tract comprising 640 acres of land in the Kiskiminetas valley was secured. The town was laid out on sloping ground, the site being an ideal one, surrounded on all sides by wooded hills. Although many workingmen's towns have been planned and brought to at least a partial success, still the problem was essentially a new one. The most successful experiments which could serve as a guide had been made under a European system of paternalism. This system, although successful in monarchical countries, will not thrive in the United States, and such towns as Pullman, Ill., are evidence of this fact.

At Vandergrift the value of aesthetic surroundings was kept in the foreground and the plans were drawn under the direction of the late Frederick Law Olmsted, the famous landscape gardener. Broad streets, the absence of rigid lines and angles, plots for lawns, flower beds and ornamental shrubbery, these were all object lessons to the builders of the town, suggestions which have been eagerly accepted and acted upon with the result that everywhere the unsightly has been eliminated or kept in the background. Now, after eleven years, not a prettier place is to be found than Vandergrift. It is said that no one who has once lived there can remove to another town without experiencing the pains of nostalgia.

Vandergrift is a "dry" town, which may account for the general prosperity prevailing there. The projectors of this enterprising town received medals at the exposition in Paris, Liege, Belgium and St. Louis, yet nine-tenths of the elements of success in this beautiful little city should be credited to the high average intelligence of its citizens.

Railway's Interest Noted.—Considsiderable interest has been aroused in Pennsylvania by the notice of the Reading Iron Co. in the recent report of George F. Baer, president of the Philadelphia & Reading Railway Co., as it was the first time this company had ever been mentioned as one in which the railway was interested, although long understood. It seems the railway has some $11,000,000 of an asset in the iron company and has been getting six per cent from it. The Reading Iron Co. has two furnaces in Berks and Lehigh counties, Pa., and several mills in Berks and Mantour counties.

BOOK REVIEWS.

Iron, Steel and Other Alloys, by Henry Marion Howe, L. L. D., professor of metallurgy in Columbia University, New York. Cambridge, Mass., Albert Saureur. 495 + xviii pages. 123 illustrations. 6¼ x 9½ inches. Cloth. Supplied by THE IRON TRADE REVIEW for $5.00.

This is the second edition of Prof. Howe's well-known work on the properties and composition of iron and steel. The older portion of the book has been revised and the errors, so far as they have been discovered, corrected. This portion of the work requires no comment.

The author in the second edition has added some new matter and rewritten a small portion of the old. The additions comprise the classification and definitions of iron and steel, which the committee, of which Prof. Howe was chairman, adopted for presentation to the International Association for Testing Materials; a description and discussion of the Roe mechanical puddler, the Mond gas producer and the Gayley dry-air blast process. The portion of the work which has been rewritten relates to the transition substances, martensite, troostite and sorbite. In view of the fact that the work is designed chiefly for students of engineering the author has treated these subjects as mechanical mixtures in varying proportions and varying states of aggregation of the three known primary substances, austenite, ferrite and cementite.

The San Francisco Earthquake and Fire, 1906, by A. L. A. Himmelwright, C. E. New York. The Roebling Construction Co. 9½ x 11 inches. 270 pages. Illustrated. Cloth. THE IRON TRADE REVIEW for $5.00.

This book is a most exhaustive study of the effect of earthquake and fire on the buildings of San Francisco. The author was engaged by the Roebling Construction Co. to visit San Francisco immediately after its destruction and report to it as to the behavior of the various types of building construction and fireproofing.

In the carrying out of this work, numerous photographs were secured, not only of complete buildings, but also of minute details such as the failure of a column, the buckling of a girder, of the condition of a partition. All these photographs, some of them obtained at great personal risk, are incorporated in the book, together with Mr. Himmelwright's report.

Being sent out by the Roebling company, a concern engaged in fireproof construction, to report on the behavior of fireproofing, the author has naturally devoted a large amount of attention to the Roebling system, which seems to have withstood both fire and earthquake remarkably well. It must not be inferred, however, that the other systems, many of which behaved equally well, are neglected in the book. They are all discussed in detail.

The method followed in the preparation of the book comprises a photograph of each important building, with detailed views in many cases, a summary of the details of construction, a discussion of the effects of fire and earthquake on the building and comments on the same. Over 80 buildings are thus treated.

The book concludes with a chapter on general comments and conclusions, and one on lessons of the disaster. Some of these lessons are reiterations of those learned from the Baltimore, Rochester and Toronto fires, while others are new and valuable. Some of the more important are: The protection of openings in the exterior walls from exposure fires; the protection of columns and other important structural members; the use of refractory materials in the facades; the use of reinforced concrete in partitions, and of metal treads in stairways; the elimination of pipes from columns; the provision for expansion of steel lintels; the avoidance of copper in metal lath and plaster ceiling construction. The lessons of the earthquake show that the foundation should be capable of moving as a unit; that steel frame superstructures should be used; high chimneys and towers of plain masonry should be avoided; and roofing tiles should be anchored in position.

The book contains much of value, and should be in the hands of everyone engaged in fireproof building construction.

Bethlehem Dividend Cut.—Directors of the Bethlehem Steel Corporation have declared a quarterly dividend of ¾ of 1 per cent on its preferred stock. The last previous quarterly dividend was 1¾ per cent. The directors announced their expectation of declaring a similar dividend at the next quarter, making an aggregate for the current year of 5 per cent. The statement issued by President Schwab said: "While the corporation has more than earned the full dividend at the rate of 7 per cent upon its preferred stock, the directors deem it advisable to limit the dividend for the current year to 5 per cent, because of the recent curtailment of the orders for armor plate and other government work, and because the new plant for commercial work and the additions to the old plant now in process of construction will not begin to produce revenue until the latter part of next year."

GRADING PIG IRON FOR THE FOUNDRY[1].

BY P. MUNNOCH.

Although several schemes for grading pig iron by analysis have been proposed, the practice of buying to analysis for foundry purposes has made little headway in Great Britain.

This is due to some extent to the fact that no system yet proposed has been wide enough in its scope to suit the requirements of all branches of the foundry industry. Most of these systems have been based either on a fixed ratio of silicon to sulphur, or on a maximum sulphur, the grade being determined by the amount of silicon.

Owing to the extreme variations of the ratio of silicon to sulphur occurring in all grades of every brand of pig iron made, none of the methods proposed could include more than a small proportion of the irons now used in the foundries. The inevitable result of the adoption of such schemes would be the immediate increase in price of the iron sold to these specifications, as the majority of furnaces would be unable under present conditions to turn out half their make to suit the specifications. If they were able to do so and all iron made came within these specifications, it would be the greatest misfortune that could possibly befall the foundry industry.

Different classes of castings require vastly different composition, and no scheme for grading by analysis, hitherto put forward is sufficiently elastic to suit all requirements. Founders making one class of work may require No. 3 iron with three per cent of silicon, but others making a different class of work may require No. 3 iron with one per cent of silicon, whilst generally silicon between these limits is required. Those buying No. 1 iron require a soft iron with low sulphur and high total carbon, and may prefer four per cent or only two per cent of silicon. Similarly in the case of the lower qualities, say No. 4 forge, some prefer above two per cent silicon whilst others require below one per cent.

As both high and low silicon irons of similar grade are a necessity in the foundry, it would be detrimental to the interests of the industry if all iron was made either high or low silicon to suit the requirements of one branch only.

Considering the matter from another point of view, some furnaces are so situated that they are best able to turn out iron high in silicon, that

[1]A paper presented at the Middlefield (August, 1906) meeting of the British Foundrymen's Association.

is, comparatively high throughout all grades, whereas others are so situated that they can with more advantage turn out low silicon irons. What is required is that those who use either one or both of these extremes, or iron of intermediate silicon contents, shall be able to obtain them with more certainty and regularity than is the case at the present time.

From the point of view of those making large castings, the curse of most foundry irons is high silicon. It is a very difficult matter, in some districts, at the present time to procure iron, especially the lower grades, with a sufficiently low silicon. The tendency of most irons is towards high silicon. This is due to some extent to the leaner and more silicious ores now used, to the rapid driving and modern methods of working, and possibly to a small extent, to the persistency with which the virtues of silicon, as the universal remedy for all the troubles to which the foundry is heir, are extolled in foundry literature.

There is no doubt that high silicon iron is of very great advantage especially where sulphur is usually high, or where very thin castings have to be made, especially so if these require much machining. Generally speaking, however, a high silicon is only a poor substitute for low sulphur.

Grading by Fracture.

The question as to what the grade of pig iron depends on is rather difficult to answer, as it does not depend entirely upon the amount of any one element, but on a combination of several. Taking a broad view of the matter from No. 1 through the several grades down to white iron, it will be seen that sulphur is practically the controlling element. This controlling power is modified to a more or less extent by the relative amounts of the other constituents, but chiefly by the amount of total carbon present. The total carbon must, however, be considered in relation to the phosphorus present, and also to some extent to silicon when much above or below the normal is present.

Practically silicon varies more than any other element in the composition of foundry pig irons. Although silicon has great influence on the properties of castings, it has very little influence on the grade of pig iron as determined by fracture. Therefore we are able to obtain pig irons almost identical in fracture and therefore similar in grade which may contain from one per cent to four per cent of silicon, and even greater variation than this is possible.

The character of the irons produced in different districts, depends chiefly upon the amount of manganese and phosphorus present, but the varying amounts of these elements have practically no effect on the grade of ordinary foundry irons. Those high in phosphorus have a lighter colored fracture than low phosphorus irons.

In addition to chemical composition the grade of pig iron depends upon and is modified by the varied conditions of casting and cooling.

As the grade is determined by the size of the grains of crystals it varies to some considerable extent with the judgment of the sampler. In mottled iron, white iron and glazed iron, there is a distinct characteristic appearance apart from size of grain.

The following tables show the extreme variations in composition of irons the author has met with. The irons are classified according to the grade for which they were bought and also those which were considered properly graded. Others may have met variations outside these extremes.

Table I.*

Silicon.	Silicon in iron bought.	Silicon in iron properly graded.
No. 1 iron....	1.05 to 5.25	1.05 to 5.25
No. 2 iron....	1.20 to 4.82	1.20 to 4.85
No. 3 iron....	.72 to 5.90	.80 to 4.40
No. 4 (foundry)	1.20 to 4.00	1.20 to 3.50
No. 4 (forge)	.50 to 3.80	.50 to 2.90
Mottled	.50 to 2.15	.50 to 2.15
White	.45 to .80	.45 to .80

*Close No. 3 included as equivalent to "Cleveland" No. 4 foundry.

Table II.

Sulphur.	Sulphur in iron bought	Sulphur in irons properly graded.
No. 1 iron....	.005 to .05	.005 to .05
No. 2 iron....	.005 to .05	.005 to .05
No. 3 iron....	.010 to .15	.010 to .07
No. 4 (foundry)	.025 to .15	.030 to .10
No. 4 (forge)	.050 to .220	.060 to .195
Mottled	.150 to .295	.170 to .280
White	.200 to .500	.200 to .500

Table III.

	Total Carbon.	Combined Carbon.
No. 1	3.15 to 4.85	Nil to .96
No. 2	3.15 to 4.06	Nil to .92
No. 3	2.45 to 4.20	Nil to 1.23
No. 3 close...	2.80 to 3.95	Nil to 1.50
No. 4 (foundry)	2.60 to 3.45	Nil to .62
No. 4 (forge)	2.98 to 3.95	Nil to 1.60
Mottled	2.85 to 3.70	1.0 to 2.5
White	2.83 to 3.60	2.83 to 3.60

No. 4 foundry "Cleveland" iron only.

The following table is taken from an article by O. Leyde in *Stahl and Eisen* mentioned in the journal of the Iron and Steel Institute proceedings Vol 2, 1904, page 624.

Silicon average of 90 works in the United States compiled from analyses of pig iron by Seymour R. Church, U. S. A.

Table IV.

	Silicon, per cent.
No. 1 .....From	.90 to 4.0
No. 2 ..... "	.35 to 3.8
No. 3 ..... "	.40 to 3.1
No. 4 ..... "	.20 to 2.4
No. 5 ..... "	.10 to 1.75
No. 1 soft..... "	2.10 to 5.50
No. 2 soft..... "	2.30 to 4.50

Most of the above are from makers own figures and show that irons of similar grade with high and low silicon contents are made and used in other countries besides our own. (Great Britain.)

From the foregoing examples it will be seen that silicon varies to a great extent in each grade.

Sulphur also varies but the limits are more readily defined and there is a regular increase. In actual practice we find that the sulphur is generally within certain limits, and the fracture to a great extent, indicates the sulphur.

Total carbon also varies to a great extent and in conjunction with sulphur practically governs the grain. Where total carbon is low the grain is smaller than indicated by sulphur present.

An iron with a high content of total carbon will carry more sulphur without affecting appearance of fracture than one with normal carbon. Conversely an iron with a total carbon below the normal will have a smaller grain and will therefore appear lower in grade.

Total carbon must always be considered in conjunction with phosphorus as an iron low in phosphorus can carry more carbon than a high phosphorus iron. Usually 1.5 per cent of phosphorus displaces about 0.5 per cent carbon.

Comparing the results tabulated it will be seen that no table, however drawn up, could possibly include all these variations.

These results are extremes met with in practical experience with over 40 brands of iron and are much greater than can possibly occur in any one brand. However, taking one brand considerable variations occur from time to time though some vary to a much greater extent than others.

Systems for Grading by Analysis.

Iron for the foundry, except in very few cases, is graded and sold by fracture alone. Where hematite iron is made it is often sold to analysis and the iron is graded by fracture or analysis as is convenient, but unless specified, the iron is not sold by analysis.

Practically the grade is determined by the amount of sulphur present, Table V giving the usual limits.

Table VI is that adopted by the London metal exchange for British foundry irons.

Table V.

No. 1	sulphur not over .035
No. 2	" " " .045
No. 3	" " " .060
No. 4	all above .06 sulphur which is not mottled or white.

Table VI.

	Silicon.	Sulphur.	Phosphorus.
No. 1	2.3 to 3.5	not over .035	not over 1.65
No. 2	2.5 to 3.5	" " .045	" " "
No. 3	1.75 to 3.0	" " .060	" " "
No. 4	1.50 to 2.5	" " .080	" " "

This table is based on sulphur contents. The limits of silicon given are those within which the bulk of "Cleveland iron" of these grades would be expected to fall, if made under average conditions.

Table VII is given as for British foundry iron from a paper read before this association by W. B. Parker, who it will be seen bases the grading principally on the silicon and combined carbon.

Table VII.

Grade.	Silicon required.	Total Carbon, limits allowed.		Combined Carbon maximum.	Sulphur, maximum
No. 1	3.8	4.0	3.25	.10	.05
No. 2	3.25	3.5	3.00	.20	.05
No. 3	3.00	3.25	2.75	.30	.05
No. 4	2.75	3.00	2.50	.40	.06

Table VIII is that adopted by the American Foundrymen's Association.

Table VIII.

Grade.	Silicon.	Sulphur.
No. 1	2.75	.035
No. 2	2.25	.045
No. 3	1.75	.055
No. 4	1.25	.065

Variation allowed:

Silicon 10 per cent of above values either way.

Sulphur .010 above standard.

The foregoing tables may be convenient for defining standard qualities but a great quantity of iron now used in the foundry is outside the limits given.

Grading by Analysis.

The system of grading by analysis most suited to both the foundry and the blast furnace is one in which the grade is based upon a fixed scale of sulphur contents.

No. 1 iron in addition to sulphur requires specification of total carbon or fracture.

The following table shows proposed sulphur limits, the grade numbers being those in general use in this district.

The sulphur limits given would include the bulk of the iron graded to these numbers by fracture.

Using this system of grading founders would order iron of any definite grade (or equivalent sulphur) with one per cent or three per cent silicon, or any other percentage of silicon required.

When iron of definite silicon contents is ordered, should iron of that particular percentage not be available, the equivalent amount of same grade irons which would give the required percentage when mixed, would be taken if advised and shipped separately but in no case would iron of above 0.50 per cent variation either way be taken except by special arrangement.

In addition to grade (i. e. sulphur), in place of ordering iron to any definite percentage of silicon, the following or some similar classification can be used.

For the purpose of defining standard qualities and for convenience of stocking this system will probably be more acceptable to the blast furnace people.

Glazed iron (silicious iron) would be classified as special high silicon iron, and would usually fall within sulphur limits of No. 2 and No. 3 qualities.

Using this classification founders would order iron of any grade (or sulphur) of high, medium or low silicon or special high or special low silicon when these extremes are required.

There are furnaces, the bulk of whose make of pig iron would be medium silicon, if classified according to Table X. There are others making iron almost entirely below the medium in silicon contents, while other furnaces turn out iron which seldom falls below the high silicon classification.

In all cases where iron is sold to analysis, or grade and silicon classification, as outlined above, the actual analysis of sulphur and silicon in the iron sent must be given to the buyer.

Considering the requirements of analyzing, selecting, and stocking to analysis, it is questionable whether the bulk of pig iron makers are in a position to sell to analysis.

There are furnaces, even in these days, which do not keep a chemist, and there are many which do so, who confine their attention almost entirely to the materials they buy, and pay very little to the iron they produce.

There are also some who do partial analysis as a daily routine, but who, if asked for a complete analysis would have difficulty in finding one of recent date in their books. There is no doubt a small majority who could without much additional expense sell the bulk of their iron to analysis.

However, even if the pig iron producers were able to sell to analysis very few founders have sufficient knowledge of their requirements, as regards analysis to be able to take advantage of that system.

Table X.

Grade.	Sulphur.	Special low.	Low.	Silicon. standard quality.	High.	Special high.
No. 1	not over .04	below 1.8	1.8 to	2.5 to 3.3	to 4.0	above 4.0
No. 2	" " .04	" 1.8	1.8 to	2.5 to 3.3	to 4.0	above 4.0
No. 3	" " .06	" 1.5	1.5 to	2.2 to 3.0	to 3.8	above 3.8
No. 4 (foundry)	" " .08	" 1.3	1.3 to	1.8 to 2.6	to 3.3	above 3.3
No. 4 gray forge	" " .12	" 1.0	1.0 to	1.5 to 2.0	to 2.8	above 2.8
No. 4 hard forge	" " .18	" ..	.80 to	1.3 to 1.8	to 2.5	above 2.5
Mottled	" " .28	" ..	below	1.0 to 1.5	above 1.5	
White	all over .28	" ..	below	.5 to 1.0	1.0	

Table IX.

Grade.	Sulphur.	Silicon.	Total Carbon.
No. 1	not over .04		See note.
No. 2	" " .04		Not specified.
No. 3	" " .06	To specification with	" "
No. 4 (foundry)	" " .08	25 per cent allowance	" "
No. 4 (gray forge)	" " .12	above or below	" "
No. 4 (hard forge)	" " .18	amount specified	" "
Mottled	" " .28		" "
White	all over .28		" "

Note.—No. 1 iron not under 3.3 per cent total carbon. Cleveland irons. No. 1 iron not under 3.8 per cent total carbon. Hematite irons, both medium silicon or No. 1. Fracture accepted as equivalent to above carbon contents. Variation of sulphur allowed 0.005 per cent above standard for Nos. 1, 2 and 3, 0.01 per cent above for No. 4 and lower qualities.

Selling by Grade and Silicon.

As an alternative to selling entirely to analysis, the author proposes a system intermediate between that at present in use and that just outlined, namely, buying by grade and silicon. This is an advance on the present system and is practically the first step towards buying by analysis.

This method incurs very little expense for analysis at the furnace and can be worked in conjunction with selling by fracture or selling by analysis.

Providing the silicon is known, the fracture of pig iron is generally a satisfactory guide to its behavior in the foundry. That is to say, the fracture usually indicates the amount of sulphur or the ratio of sulphur to total carbon.

With this system the grade and silicon classification according to table would be used. As the grade would be determined by fracture, sulphur would not be guaranteed, but would usually be found within the limits given.

Founders using this method of buying would order any definite grade with medium, high, or low silicon or special high, or low silicon as required.

With hematite irons No. 4 grade includes the three No. 4 grades given in table. It would be more convenient for founders using these irons if the grading of this table was adopted and possibly more profitable to the makers as a graduated decrease in prices could be substituted in place of the present difference in price between No. 3 and No. 4 qualities.

Under the present system of grading by fracture, a founder ordering No. 3 iron may require three per cent of silicon. Should the iron on the pig beds contain one per cent or any other amount, if the fracture is No. 3 it is shipped independent altogether of what his requirements are, and in all probability the founder who requires No. 3 iron of one per cent silicon, will get No. 3 iron with three per cent when it is made. Buying to the foregoing classification of silicon would enable the founder to buy iron of more uniform silicon contents.

Actual analysis of silicon contents must be given by the pig iron makers, of all iron sent out. Where possible sulphur contents might also be given, but no guarantee of sulphur limits would be given, fracture and silicon limits only being guaranteed.

A system of this kind would soon educate both the founder and the iron maker to the requirements of buying and selling to analysis.

As either of the foregoing systems would only come gradually into general use, the iron producer would be able to select iron of definite analysis for those requiring it, and sell the remainder as at present to those requiring fracture only.

The proposed silicon classification would not be entirely suitable to those making only low silicon irons such as cold as blast irons. In this case makers themselves could draw up a table of classification based on a lower silicon content.

Before selling by analysis can make any progress, the makers of pig iron will have to give more information regarding the general composition of the irons they make, and the usual limits of silicon in the different grades. They will also have to state the limits of variation they are willing to guarantee, and whether they are willing to adopt or sell by any of the various schemes put forward for grading or selling by analysis. This is a matter which in the near future they will be compelled to seriously consider.

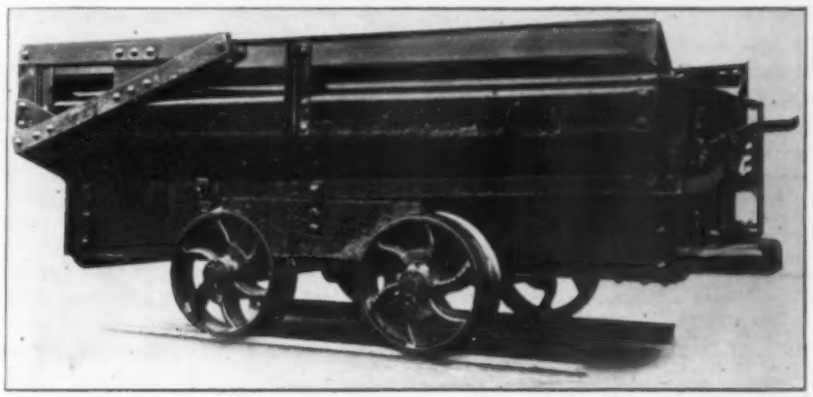
WHY GARY WAS CHOSEN.

Why the Gary, Ind., site was chosen for the new plants of the United States Steel Corporation is explained by an official, who says: "Ore is handled very cheaply in cars and ships and the freight is very low compared to that on finished products. It costs a great deal to ship finished products, no matter how they are handled. Steel rails seldom go by water, because it is slow work, and expensive, getting such a cargo arranged in the hold of a ship, to say nothing of the difficulty of loading and unloading. Ore is dumped in enormous quantities from cars to ships in short order and at small cost. The cost of transporting finished products from the mills, were they near the mines, to the head of the lakes, would be almost as great as the entire cost of hauling ore to Gary. In every way Gary suits our purposes. It has the location both with respect to water and rail transportation for getting the raw material and distributing finished and semi-finished products promptly. The work at Gary is progressing satisfactorily."

The Youngstown Sheet & Tube Co., Youngstown, has invited a number of friends to visit its new Bessemer plant, plate and other mills next Friday. A special train will be run from Cleveland.

A NEW STEEL MINE CAR.

Within the comparatively recent past mine operators have observed a complete transition in the types of cars supplied by the railroads for the transportation of mine products from the source of supply to the point of consumption. The small capacity wooden car has been superseded by the modern car of steel construction and the economical advantages of the latter have been thoroughly proven. Upon the demonstration of superiority of the steel car in railroad transportation impetus was given to the plan of extending this style of construction to many of the smaller types of cars for industrial purposes, and particularly to mine cars. The increasing installation of power hauls, electric and otherwise, the opening of properties at greater distances from tracks where the coal is loaded upon railroad cars necessitating handling the trains of mine cars at high speeds, etc., have also served to convince operators that stronger cars, as well as cars of greater capacity, are demanded to insure most economical operation. The steel mine car, it is said, has been in service for thirty years in certain French mines where the coal handled contains much sulphur, the most disadvantageous circumstances under which steel might be utilized, due to deterioration of the plate in contact with the sulphur water drippings.



Pressed Steel Mine Car.

For several years in the immediate past, increasing interest in, and a growing demand for, the steel mine car has been displayed in this country, with the result that the Pressed Steel Car Co., of Pittsburg, installed machinery for this particular construction at its extensive steel car plant located in McKees Rocks, a suburb of Pittsburg. A number of steel mine cars have been manufactured at this plant for both the bituminous and anthra-

cite field. One of the latest designs is shown in the accompanying illustration, and its general construction will be evident at a glance.

While no particular radical departure in the method of transportation is effected, a car with large cubical content, in proportion to external dimensions is gained, and the construction with steel plates and shapes insures a car which offers great resistance to shocks, accidents, etc. Such a car will remain practically uninjured in a collision, fall from tipple, or other accidents that would completely destroy the usual wooden car. These cars have been built with capacities ranging from 40 to 85 cubic feet for the bituminous field, and as high as 105 cubic feet for service in the anthracite district. The illustration here shown is from a photograph of one of a lot of 500 steel mine cars recently built by the Pressed Steel Car Co. for one of the West Virginia properties. The general dimensions are as follows:

Length over buffers	8 feet 6 inches
Length inside of body	7 feet 1½ inches
Width inside at top	4 feet 2¼ inches
Height of side from rail	3 feet 2 inches
Gauge of track	40 inches
Wheel base	28 inches

The car body is made of 3-16-inch steel for sides, end and door; the floor of ¼-inch steel pressed to shape and riveted together and braced with two girth angles. The buffers are of pressed steel, ⅜ inch thick, the floor pressed up from a point near the axle to the end of the car to bring the buffers to the right height; with drawbar attached and all riveted together. The doors are pressed to shape; secured by arm of 2½-inch x ½-inch steel, and side angle 3-inch x 2½-inch x ¼-inch steel, provided with a lift hook. The wheels are 16 inches diameter, self-lubricating, and fit loose on the axle. The axles are 2¼ inch square, secured to the floor of the car with clamps and ⅝-inch bolts. The miner's pin is placed on the inside end of the car, 12 inches from the floor and two inches from the side, for checks.

A New Idea in Riddles. — "The Rockwell" is the name of a new riddle which has been placed on the market by the S. Obermayer Co., with factories at Cincinnati, Chicago and Pittsburg. The main advantage claimed for the riddle is that a strip of galvanized iron is bound securely over the rims and liners at the point where they lap. This prevents the joints catching and breaking when coming in contact with other objects. A patent has been applied for.

HEAVY GAINS IN EXPORT TRADE.

That little aid is being received from abroad by our hard-driven iron, steel and manufacturing industries is indicated by advance sheets of the commercial movement during August and for the first eight months of the year. These show that during this month dutiable importations of pig iron, ingots, plates, wire rods and other leading products were only slightly in excess of those for August, 1905. In fact, for the eight months ending with August, 1906, total importations of iron, steel and their manufactured products have been only about $4,000,000 greater in value than during the corresponding months of 1905. Iron ore importations for the month were 93,790 tons, against 82,108 tons in August, 1905, and for eight months, 737,660 tons, against 588,526 tons for the first two-thirds of the previous year.

The outgoing movement on the other hand, has been uniformly heavier, with important increases in almost every line. The total value of exportations of iron, steel, semi-finished products and machinery for the eight months was $113,299,535, an increase of about 46 per cent over the same period in 1905, when the total valuation was $90,768,479. For August last, however, the gain was at the rate of only about 20 per cent. Comparative values of the exports in various leading lines for the eight months of 1905 and 1906 are presented below:

	1905.	1906.
Machinery	$44,225,201	$53,170,130
Iron Ore	339,723	547,305
Pig Iron	500,660	895,726
Bar Iron	830,366	1,755,409
Bar Steel	1,119,433	1,325,510
Steel	4,622,501	6,167,084
Sheets—plates	2,426,024	3,993,315
Pipes, etc.	5,579,040	5,877,460

COREY ON LABOR FAMINE.

"While there is undoubtedly a scarcity of labor throughout the United States, it has not," says W. E. Corey, president of the United States Steel Corporation, "assumed alarming proportions, and apparently it will not, as indications point to a relief about the 1st of November, when crop-moving labor will be released for other occupation. While not confined to any particular section, it appears that the coking-coal regions are principally affected, especially the Pocohontas district, though the scarcity there is not retarding progress. The labor supply in the ore mines of the upper lakes is good, better than in sections further south. What we need is larger immigration."

No. 1 turn at the Ohio Works of the Carnegie Steel Co., Oct. 12, turned out 636 ingots in 12 hours, breaking the mill record.

MOOSE MOUNTAIN ORE.

Valuable Canadian Deposits to be Reached by Railroad Next Year.

(Special Correspondence.)

Toronto, Can., Oct. 22.—The valuable character of its hitherto undeveloped iron ore deposits at Moose Mountain, to which the Canadian Northern is next year to extend its James Bay railroad, has long been recognized. Prof. C. K. Leitle, in a paper published in the annual report of the Ontario Bureau of Mines for 1903, states that the iron formation belts of the Moose Mountain range show very suggestive similarity to the iron and jasper belts and associated greenstones and green schists of the Vermilion iron district of Minnesota. They differ in the character of the ores, those in the Moose Mountain range being magnetic, while those in the Vermilion range are hematite. While much of the ore is too lean for present use, there is also present a considerable amount of ore running about 58 and 60 per cent in metallic iron. Sulphur, an element to be feared in magnetic ores, is in very small quantity, the considerable number of analyses made of the ore showing sulphur varying from 0.01 to 0.08 per cent, while titanium is altogether lacking. The ore is hard and crystalline and will crush to a good size for furnace use, and will doubtless serve admirably for mixing with soft ores, such as the Mesabi. The haul to Toronto will be rather less than 300 miles.

SUSQUEHANNA REORGANIZATION.

Stockholders of the Susquehanna Iron & Steel Co. have been notified of an opportunity to subscribe to the new issue of $750,000 preferred stock of the Susquehanna Iron Products Co. at par, $5 a share, and will receive one share of new common stock for every two shares of preferred stock subscribed for. The new issue of stock has been underwritten by Frederick H. Clarke, of New York, and associates. The new company was recently incorporated under the laws of New Jersey for the purpose of carrying into effect the plans of reorganization. Stockholders are not obligated to subscribe for any of the new stock and any stockholder who does not accept the plan of reorganization will receive his pro rata share of the assets of the Susquehanna Iron & Steel Co. remaining after the payment of all debts, obligations, expense of receivership, etc.

WAGE REDUCTION

EFFECTIVE IN THE MIDLAND IRON DISTRICT.

British Prices, However, are Tending Upward.—Recent Advances.

(Special Correspondence.)

Birmingham, Eng., Oct. 13.—The wages return by the Midland Iron & Steel Wages Board gave a little shock to the trade, the reduction of 2½ per cent being a kind of "bolt from the blue." An increase in the north had raised expectations of a rise in the Midlands. Northern iron has gone up by 2s 3d during the two months, making an average rate of £6 12s 8d. The Midland price, on the contrary, has gone down from £6 18s 6d to £6 16s 2d. Northern wages, therefore, go up 2½ per cent and Midland wages come down 2½ per cent. The time-honored 6d in lieu of northern extras, which has been the apple of the Midland puddler's eye, is thus gone at a stroke. The men are both vexed and angry, but they are quite helpless. The day has gone by when a strike can be declared, and as the men framed the scale themselves, they cannot blame their employers. But they are blaming them pretty freely for dropping the selling prices, a prominent official declaring that they have "been giving the iron away." The return is an eye-opener as to the scramble for orders, which took place in July, when trade was really dull, and it is very likely that the drop in marked bars officially declared had a good deal to do with it. The men are consoling themselves that a rise of only 1s 4d in selling price will be necessary to restore the 2½ per cent. But unless northern wages drop in the meantime the balance will be again upset. It is becoming increasingly evident that no human power can make the northern and Midland scales run parallel.

The quarterly meeting is now the center of interest. Pig buyers are rather in a quandary as to what to do. Report has it that some of the sellers are "shading off" prices a bit, but the dealers stoutly deny this, and some of them assert they have got work enough to keep them going until February or March. Undoubtedly, the heavy shipments from Cleveland to Germany are keeping up the market. But the destination of some of these shipments has been somewhat speculative.

The Trend is Upward.

On the question of prices, no great changes are likely. Makers have agreed to raise the price of iron and mild steel wire £1 per ton, making the basis £9 15s. Some of them predict that this will rise to £12 per ton before the maximum is reached. A second advance has been declared in galvanized hollowware. The strip makers are not quite clear whether to put up prices. The tube makers are very nervous on the point, and in view of the recent combination they fear that an increase may seriously check demand.

There is a good deal of uneasiness over the rapid rise in steel, which is now beginning to affect the ship building trade. Since the revival commenced steel plates have increased from £5 10s to £7 10s, and other material in proportion, and this is a serious matter in the building of a ten-thousand-ton ship. It is this feeling of anxiety which accounts for the strong resistance that is being offered on the Clyde to the demand by the boiler makers for higher wages. The latest news is that the Provosts of Glasgow and several neighboring townships have offered their good offices as a kind of advisory board, or board of arbitration, but so far there is little prospect that they will be favorably received. Up to the present, both sides have firmly refused to listen to any suggestion of conciliation or arbitration.

The news about tin plates is more cheerful, mainly because there is a better demand from America and Russia. The last named customer was sometime ago returning whole cargoes, owing to the complete suspension of the oil trade. Now it has resumed buying which seems to suggest that in that part of the country business has recommenced on a more pacific basis.

Some Encouraging Reports.

Cheerful views with regard to a gigantic business were expressed at the meeting of the Dunderland Iron Ore Co., Sept. 29. Sir Joseph Lawrence anticipated a profit equal to £397,000 per annum, presuming it would get 2,000 tons of briquettes per day. These contained over 65 per cent of iron. It seems the Consett Iron Co. is its principal customer, and George Ainsworth, the general manager of the Consett Iron Co., said he had received a very satisfactory report as to the character of these briquettes. At a subsequent meeting of the debenture holders, Windsor Richards, a former director, having large interests in a variety of British and Welsh companies, was appointed trustee for the debenture stockholders in the place of the late Sir David Dale.

Ebenezer Parkes, M. P., chairman of the Unmarked Bar Association has found it necessary to resign this position, owing to the pressure of parliamentary and other business.

Great Plant at Swansea.

It is now pretty well decided that the new works of Messrs. Cammell, Laird & Co. will be located at Swansea, where a million pounds are to be expended on the construction and equipment of the works, which will give employment to 10,000 workmen. The harbor trustees have lost no time in intimating that they will render all the service possible, and they have already under consideration a proposal for the extension of the quay accommodation by 25 per cent, at a cost of £100,000. The firm of Cammell is having a great run of prosperity. Its ordnance-making business at Coventry is thriving so well that although it employs 3,000 work people it will probably have to increase the number considerably in a short time.

Great satisfaction was expressed at the annual meeting of Armstrong, Whitworth & Co., of Newcastle-on-Tyne, with regard to the work of the past year. Sir Andrew Noble, who presided, said nearly every department had advanced both as regarded rapidity in completion of work, and economy in production. The directors had considered it desirable to obtain an interest in the firm of Whitehead & Co., Ltd., which for some years has been making experiments in the improvement of torpedoes, and which possesses important patents.

George Macpherson, chairman of the Midland Iron & Steel Wages Board, and one of the best known men in the trade, has been re-elected chairman of the South Staffordshire Drainage Commission for another year. The most interesting feature of his speech was the fact that the Mond gas engines lately introduced have worked very successfully. There is still hope that this new power may be found applicable to the iron trade. The principal difficulty is the great outlay on a new plant which must be undertaken.

The firm of Joseph H. Pearson has just been registered with a capital of £30,000 to acquire the business of ironmasters as well as colliery proprietors, coke and brick manufacturers, miners, etc., carried on in Staffordshire. The subscribers are all members of the Pearson family and the majority are sons of the late Joseph H. Pearson, who for many years was one of the most successful members of the trade.

Steel Direct From Ore.—A report has been received from Los Angeles, Cal., that John A. Potter, formerly of South Chicago, Ill., has developed a process of making steel direct from iron ore. No details of the process are given, aside from the fact that the fuel used is crude oil. The work is said to have been conducted at the plant of the California Industrial Co., Los Angeles.

REPUBLIC IRON & STEEL.

Net Profits Heavy After Payment of Dividends.—The Annual Report.

The Republic Iron & Steel Co. has issued its annual report for the year ended June 30, 1906. The income account compares as follows.

	1906	1905	1904
Gross profit..	$3,777,401	$2,508,068	$1,306,068
Deprec., int. disc., etc...	1,038,840	1,134,461	1,560,256
Net profit..	$2,738,561	$1,373,607	*$254,188
Dividends ...	1,429,183	.....	357,296
Surplus ...	$1,309,378	$1,373,607	*$611,484
Prev. surplus.	4,010,329	2,636,723	3,248,207
Total sur..	$5,319,707	$4,010,330	$2,636,723

*Deficit.

The report shows a year very similar to 1903 when gross profits were $4,123,499, depreciation charges, etc., $1,382,599, dividend payments $1,427,083 and surplus for year $1,313,817. The balance sheet as of June 30, 1906, shows total assets of $63,650,506, the largest items being; real estate, plants, machinery, etc., $49,200,618; new construction, $1,852,775; cash, $3,253,283; raw and finished materials, $3,693,045; and accounts receivable, $3,656,583.

In his remarks to stockholders, President Topping says:

"The net working assets after discharging all obligations, excepting the bonded debt, are $7,974,044. The inventories stand on the books at cost prices for raw materials and at less than cost prices for finished materials; which prices are in all cases below the present market.

"The physical condition of the rolling mill plants and other factories has been substantially improved and strengthened. Large expenditures have been made for reconstruction and renewals with a view of not only greater diversity of product, but increased finished tonnage. The policy of reconstruction and concentration of operations has been continued. The production of finished and semi-finished products (production of semi-finished products used for conversion being excluded) in the last fiscal year was 742,435 tons, compared with 672,035 in 1905, 456,033 in 1904, 577,222 in 1903 and 576,909 in 1902.

"The pig iron production in the last fiscal year was 492,244 tons against 442,640 for 1905, 377,565 in 1904, 387,717 in 1903, and 376,297 for 1902. A new blast furnace will be blown in prior to Jan. 1, 1907. With all new furnaces in blast, the furnace capacity of the company will be as follows: Northern district, 600,000 tons per annum; southern district, 250,000 tons per annum.

"During the year a large amount of development work was done on both the northern and southern ore properties and the tonnage of ore produced greatly increased. The ore reserves have been materially strengthened by the development of territory heretofore unexplored, and also by additional purchase of ore under term contracts at favorable prices.

"The ore production in the last fiscal year amounted to 970,106 gross tons, against 794,167 in 1905, 864,957 in 1904, 724,797 in 1903 and 539,613 in 1902. The estimated ore reserves are: For the northern district, 22,870,755 tons of Bessemer and non-Bessemer, and for the southern district, 49,041,800 tons of non-Bessemer, a grand total of 71,912,555 tons.

"The development of the coking coal property at Republic, Pa., has been vigorously prosecuted. The Republic mine is now in operation and supplying coal sufficient to operate 183 of the new coke ovens which have been constructed during the past year. The total number of ovens contemplated at the Republic plant is 475. Of this total the executive committee has authorized the construction of 305, and of this number 250 have been completed. The construction operations will be continued and new ovens placed in operation as rapidly as the mine output of coal can be increased.

"The coke production in the last fiscal year amounted to 343,485 tons, compared with 256,254 in 1905, 250,520 in 1904, 347,646 in 1903, and 149,699 in 1902. The coking capacity of the northern district is 232,800 tons per annum from 388 ovens, and in the southern district 606,000 tons from 1,010 ovens, a grand total of 838,800 tons per annum from 1,398 ovens."

The report shows that $2,021,168 was expended for new construction in the last fiscal year, as compared with $728,980 in the preceding fiscal year. Gross sales aggregated $26,196,438, as compared with $22,188,842 in the preceding fiscal year. The company produced 742,435 tons of finished and semi-finished products, as compared with 672,012 tons in the preceding fiscal year.

The unfilled orders now on the books of the company aggregate the heaviest tonnage on record, the report says, and as compared with the best previous year, are as follows: July 1, 1906, 377,349 tons; July 1, 1905, 279,944 tons, an increase of 97,405 tons.

At the annual meeting the retiring board of directors was re-elected, with the exception that Tracy M. Guthrie was elected in the place of Charles S. Guthrie, deceased, and James B. Duke and H. S. Black were elected in the places of Alex. W. Thompson and Harry Rubens.

Piggott, Mead & Co., public accountants, Cuyahoga building, Cleveland, have recently opened a branch office at 52 Broadway, New York, under the name of Piggott, Mead, Butterworth & Co.

UNDERGOING REPAIRS.

Furnaces in Birmingham District Promise Little Increase in Production.

(Special Correspondence.)

Birmingham, Ala., Oct. 22.—Three furnaces in this section are undergoing extensive repairing. The Sloss-Sheffield Steel & Iron Co. is adding a skip hoist and placing modern equipment to the Philadelphia furnace at Florence, Ala., entailing an expense of more than $100,000. The Central Iron Co. is doing considerable work on the inside of the furnace at Holt, and the Woodward Iron Co. is practically rebuilding one of its furnaces.

There is but little prospect for the iron make in this district to be increased to any great extent. As soon as one furnace is blown in, another has to be repaired. A prominent furnace man in discussing this situation, said recently that Alabama could hardly expect to increase its make for some time to come. However, Alabama is making more iron now than earlier in the year. The sales being made now and already booked will warrant steady operation for many months to come; perhaps through the coming year.

The statement is made that the little furnace of the Williamson Iron Co., located in this city, may be started up soon. This announcement is indeed interesting, inasmuch as it reflects true conditions. The Williamson furnace has a daily capacity of about 85 or 90 tons of iron. The ore, limestone, coal and coke is purchased, so that the first cost is knocked in the head. If a furnace with such a small capacity can be operated profitably, the conditions must be exceptionally fine. Frederick Dimmick, of the Dimmick Pipe Co., is one of the heaviest stockholders, but whether the iron manufactured here is to be used at the pipe works or is to be placed on the open market remains to be seen.

In steel circles in this state there is absolutely no change of conditions to report. Work was resumed a fortnight ago in full force on the excavations for the big steel mill at Ensley and some progress is now being made. The concrete foundations are now being worked on and in a short while it is expected that some showing will be made on the structure above ground.

The eastern parties who investigated a site in Bessemer, twelve miles south of Birmingham, looking to the erection of a steel plant to manufacture steel with a patented process, using foundry instead of basic iron in steel making, are still negotiating and there are hopes in the little town that the deal will be consummated and the actual construction started before the end of the year.

Money Situation Again Dominates Markets.

The money situation again proved the dominating feature on the stock exchanges during the past week, and, in spite of unchanged conditions in manufacturing and trade, closing quotations were several points lower than those of the previous Saturday. The sensational development was the action on Friday of the governors of the Bank of England in advancing the bank rate from 5 to 6 per cent, a point never before reached except in times of crisis, the last penalty. To these market factors was added another in the heavy destruction of values incident to tropical storms affecting the cotton and tobacco crops in Cuba and the southern states. The market also gave considerable attention to the prevailing car shortage affecting almost all lines of industry. The close of the week was marked by an extensive liquidating movement, sales for the two hours of Saturday exceeding 1,000,000 shares. For the week the total was 4,838,600 shares. Amalgamated Copper, Reading, Union Pacific and steel common were the most active. In the iron and steel field the reduction on preferred dividends by the Bethlehem Steel Co. was in a measure balanced by the sale of United States Steel 5's. at 100¾, the highest ever quoted. The situation continued entirely favorable with the exception that pig iron prices soared to dangerous heights.

Stockholders of the Tennessee Coal, Iron & Railroad Co. have voted favorably on the proposition to increase the capital stock by $20,000,000 to $50,000,000. The directors have decided to issue the remainder of the common stock, amounting to $3,800,000. The $3,500,000 issued last spring has already been used in connection with improvements and extensions.

Stockholders of the General Electric Co., at a special meeting Nov. 20, will vote on the $20,000,000 addition to its capitalization. A part of the additional funds will go for new equipment and floor space for manufacturing. Of the new stock $11,000,000 will be offered to stockholders at par.

The Ingersoll Rand Co. has applied to list $2,000,000 in 5 per cent bonds, $4,500,000 in preferred stock and $3,000,000 in common stock on the New York Exchange. For the first half of the current year it reports net earnings of $415,727.

The Warwick Iron & Steel Co. has declared the regular quarterly dividend of 2 per cent.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Oct. 13.	Closing Quotation Oct. 20	Changes	Date of 1906 Ann. Meet.	Par Value	Capital Outstanding	Dividend Basis	Dividend Being Paid	Dividend Date Last Div. Pay.
Allis-Chalmers Co	17¼	16⅝	− ⅝	Sept.	100	19,820,000		.....	.....
Allis-Chalmers preferred	45	43	−2		100	16,150,000	7 cum	.....	Feb., 1904
American Can	6⅛	6¼	− ⅛	Apr. 24	100	41,233,300		.....	.....
American Can preferred	56½	55	−1½		100	41,233,300	7 cum	5 Q.	Oct., 1906
American Car and Foundry	45¼	43¼	−2	June 28	100	30,000,000		.....	May, 1905
AmericanCar and Foundry preferred	101	100⅞	− ⅛		100	30,000,000	7 n. c.	7 Q.	Oct., 1906
American Locomotive	76⅝	72	−4⅝	Oct. 16	100	25,000,000		1¾	Nov., 1906
American Locomotive preferred	112	112⅛	+ ⅛		100	24,100,000	7 cum	7 Q.	Oct., 1906
American Shipbuilding	69	70	+1	Oct. 2	100	7,600,000	4 n. c.	1 Q.	Aug. 1906
American Shipbuilding preferred	107	110	+3		100	7,800,000	7 n. c.	1¾ Q.	Aug. 1906
American Steel Foundries	10⅛	10⅛	.....	Oct. 3	100	17,700,000		.....	.....
American Steel Foundries preferred	44	44	.....		100	17,700,000	6 cum	.....	Aug., 1905
Barney & Smith	72⅛	74	+1½	June 5	100	1,000,000	4	4	Sept., 1906
Barney & Smith preferred	141	140	−1		100	2,500,000	8 cum	8 Q.	Sept., 1906
Bethlehem Steel	20	17	−3	April 3	100	15,000,000		.....	.....
Bethlehem Steel preferred	69	63¼	−5¼		100	15,000,000	7 n. c.	7 Q.	Aug ,1906
Bullock Electric preferred	112	114	+2	Oct. 2	100	1,000,000	6	6 Q.	July, 1906
Cambria Steel	38¼	37¼	−1¼	March 20	50	45,000,000	6	3 Q.	Aug., 1906
Cambria Iron	40	40	.....		50	8,468,000	4	4 S. A.	Oct., 1906
Colorado Fuel & Iron	55⅛	50¾	−4⅛	Oct. 15	100	30,132,000	7	.....	Apr., 1902
Wm. Cramp & Sons Ship & Eng. Bldg. Co.	17	16	−1	May 31	100	6,098,000	5	.....	Nov., 1902
Crucible Steel	13	12⅛	− ⅞	Oct. 17	100	25,000,000		.....	.....
Crucible Steel preferred	78¾	78½	− ¼		100	25,000,000	7 cum	.....	Sept., 1906
Empire Steel	7	8	+1	Feb. 28	100	2,281,400		.....	.....
Empire Steel preferred	40	48	+8		100	2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	95	95	.....	Feb. 20	100	1,000,000	6	6 Q.	Aug., 1906
Fay & Egan preferred	128½	128½	.....		100	1,000,000	7 cum	7 Q.	Aug., 1906
General Electric	179	174½	−4½	May 8	100	48,256,050	8	8 Q.	Oct., 1906
International Pump	47⅛	43	−4⅛	June 5	100	12,262,500		2	July, 1905
International Pump preferred	84	84	.....		100	8,850,000	6 cum	6 Q.	Nov., 1906
Lackawanna Steel	72	72	.....	March 14	100	34,971,400		.....	.....
Lake Superior Corporation	17¼	15½	−1¾	Oct. 3	100	40,000,000		.....	.....
Niles-Bement-Pond	130	130	.....	Feb. 7	100	5,000,000	6	6 Q.	Sept, 1906
Niles-Bement-Pond preferred	105	105	.....		100	2,000,000	6 cum	6 Q.	Aug., 1906
Otis Elevator Co	55	51	−4	March 19	100	6,350,300		2 A.	Apr., 1906
Otis Elevator Co. preferred	98	96	−2		100	5,589,500	6 n. c.	6 Q.	Oct., 1906
Pittsburg Coal Co	16	16½	+ ½	Feb. 12	100	30,135,000		.....	.....
Pittsburg Coal preferred	58½	57	−1½		100	30,716,200	7	.....	Apr., 1905
Pressed Steel Car	53¾	53½	− ¼	Feb. 21	100	12,500,000		3	Aug., 1904
Pressed Steel Car preferred	97⅞	98¼	+ ⅜		100	12,500,000	7 n. c.	7 Q.	Aug., 1906
Pullman Palace Car	263	255	−8	Oct. 18	100	74,000,000		8 Q.	Aug., 1906
Railway Steel Spring	53⅜	50⅜	−3⅛	March 1	100	13,500,000		4 S. A.	Oct., 1905
Railway Steel Spring preferred	100	100	.....		100	13,500,000	7 cum	7 Q.	Sept., 1906
Republic Iron & Steel	37¼	35⅛	−2⅛	Oct. 17	100	27,352,000		.....	.....
Republic Iron & Steel preferred	98	96⅞	−1⅛		100	20,852,000	7 cum	7 Q.	Oct., 1906
Sloss-Sheffield	74½	72	−2½	March 14	100	7,500,000	5	5	Oct., 1906
Sloss-Sheffield preferred	106	106	.....		100	6,700,000	7 n. c.	7 Q.	Oct , 1906
Tennessee Coal & Iron	157	157½	+ ½	May 15	100	22,552,800		4 Q.	Nov., 1906
U. S. Cast Iron Pipe & Foundry	48½	47⅝	−1	June 27	100	12,500,000		2	Dec., 1906
U. S. Cast Iron Pipe & Foundry preferred	90½	92	+1½		100	12,500,000	7 n. c.	7	Dec., 1906
U. S. Steel	48⅝	46⅛	−1¾	April 16	100	508,302,500	2 n. c.	½ Q.	Oct., 1906
U. S. Steel preferred	107¾	105¾	−2		100	360,281,100	7 cum	7 Q.	Aug., 1906
U. S. Steel 5's	100¼	100¾	+ ½		100	463,798,000	5	5 A.	
Virginia Iron, Coal & Coke	57½	54	−3½	Sept. 18	100	8,641,600		.....	.....
Westinghouse Electric	154	154	.....	June 27	50	20,996,350	10	10 Q.	Oct., 1906
Westinghouse Air Brake	161	160	−1	Oct. 2	50	10,990,450	20	20 Q.	Oct., 1906

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The MacPhail Flask & Machine Co., Chicago, Ill., has been incorporated with a capital stock of $50,000 by J. H. Thomas, Gladys L. Eastman and R. B. MacPhail.

The Harvey Foundry & Machine Co., Chicago, has changed its name to the Calumet Engineering Works, and has increased its capital stock from $25,000 to $250,000.

The Clark Buyer Machine & Supply Co., Oblong, Ill., has been incorporated to manufacture and repair machinery. The capital stock is $25,000, and the incorporators are Clark Buyer, W. A. Foster and M. J. Anderson.

The Nestor Mfg. Co. will manufacture tools, implements, machinery, etc. The capital stock is $50,000, and the incorporators are Phillip B. Jennings, No. 234 Broadway; F. W. Geissenhainer Jr., No. 231 West 14th street; and Matthew S. Cunmer, No. 122 West 12th street, all of New York.

The K. D. Q. Mfg. Co., Cleveland, O., has been organized with a capitalization of $10,000 by S. Q. Kerruish, George Quayle, Jacob Diehl, William Kenyon and James Quayle and will manufacture patterns, machinery and tools.

The Wade Machine Co., Boston, machinists, has been incorporated with a capital stock of $10,000. The officers are, president and treasurer, Walter H. Wade, No. 724 Washington street, Dorchester, Mass.; clerk, Alfred S. Nello, No. 52 Woodville street, Everett, Mass.

The American Automatic Switch Co., Salt Lake City, has been organized for the purpose of taking over the frogless railway switch patented by John M. Powell. The capital stock of the company is $200,000 and the officers are Joseph G. Jacobs, president; James M. Moore, vice president; Frank B. Scott, secretary, and J. Adrian Scott, treasurer.

The Meyers Steel Fence Co. has been organized to manufacture fence posts and rails. The capital stock is $500,000, and the incorporators are C. H. Meyers, No. 172 Edward street; H. C. Minard, No. 87 Erie County Bank building, both of Buffalo; and Percy L. Marvin, Orchard Park, N. Y.

The Straub Machinery Co., Cincinnati, has been organized with a capitalization of $300,000 by Orville Simpson, Lewis H. Allen, Elmont H. Spooner, Paul Nacher and Frederick Gerton. A large machine shop and foundry will be erected on Knowlton street, the plant covering some four acres.

The Combination Lock Co., Durham, N. C., has been incorporated to manufacture locks, safes and hardware. The capital stock is $50,000, and the incorporators are L. W. Grisson, J. W. Tatum, W. A. Fulford and W. C. Lindsay.

The Queen City Punch & Shear Co., Cincinnati, has been incorporated with a capital of $10,000 by C. F. Mayer, C. F. Heiness, J. S. Fee and E. G. Seitz.

The St. Louis Tin & Sheet Metal Working Co., St. Louis, Mo., has been organized with a capitalization of $100,000 by C. F. Blanke, Louis T. Nolker, E. B. Peipho, R. H. Blanke and associates.

The Bridgewater Machine Co., Akron, O., has been incorporated with a capital of $20,000 by H. H. Bridgewater, F. H. Mason, M. Delehanty, G. McAlonan and F. H. Stuart.

The Brenner Safe & Lock Co., St. Louis, has been organized with a capitalization of $100,000 by Henry C. Brenner, Charles J. Graf and Edward A. Sanguinet.

The Marion Foundry & Machine Co., Edison, O., has been organized with a capitalization of $25,000 by Charles Rieger, Henry C. Noll, Louis Natzel and E. S. Riddle.

The Milton Machinery & Foundry Co., Milton, W. Va., has been incorporated with a capital of $5,000 by T. L. Morris, E. E. Dubbing, R. T. Neel and R. E. Thornbery, all of Huntington, W. Va.

The Sibley Coal & Coke Co., Panther, W. Va., has been organized with a capitalization of $100,000 by W. R. Thompson, T. J. Bryan, E. M. Watts and W. E. Bush.

New Canadian Concerns.

The following companies have been incorporated under the laws of Ontario:

Canadian Gas Power and Launches, Ltd., Toronto, $500,000; provisional directors, Joel Laishley, Wm. S. Marshall, Manson Campbell, Sidney F. McKinnon, Donald J. McKinnon, L. C. Laishley and Robert Hunter.

Ideal Concrete Machinery Co., Ltd., London, Ont., $75,000; provisional directors, Frank A. Boist, Geo. B. Pulfer, Mentor Wetzstein, John M. McEvoy and Frederick M. Leach.

Ideal Cylinder Snow Plow Co., Ltd., Toronto, $100,000; provisional directors, Elias D. Weber, George Cewric, Arthur H. Hough, Martin M. Heiles and Alex. G. MacKay.

Temiskaming-Hematite Iron Co., Ltd., Toronto, $42,000; provisional directors, Chas. George Knott, George H. Smith, Oscar M. Hodson, George Stevenson, Wm. H. Hodson and John Ernest.

Canada Steam Pump & Machine Co., Ltd., Toronto, $40,000; provisional directors, Albert H. Eby, Thomas O. Bard and Agnes A. Eby.

Canada Forge Co., Ltd., Welland, $100,000; provisional directors, Thomas J. Dillon, Charles Burgess and John L. Emerson.

The Standard Gas Holder & Boiler Construction Co., Ltd., Belleville, $40,000; provision directors, Lorne W. Marsh, William H. Henthorn and John A. Marsh.

The Scott Machine Co., Ltd., London, $40,000; provisional directors, Westley H. Braddon, George E. Scott, Percy R. Braddon, William C. Scott, Edward W. Scott, Frank H. Potts and Mary G. Carroll.

The Canadian Electrical & Motor Co., Ltd., Toronto, $550,000; provisional directors, Ronald H. Nicholls, Josiah B. Scovell, Whitford Vandusen, William A. Johnson and Henry A. Drummond.

New Construction:—

The Skinner Chuck Co., New Britain, Conn., manufacturing lathe drill and planer chucks, has acquired the Joseph C. Burnham property on North Stanley street, and will use it for adding to its plant.

Pickands, Mather & Co., Cleveland, who for a number of years have operated a fuel dock at Detroit, will build another dock about a mile above their present plant, and will make it one of the largest on the lakes.

The Waltham Emery Wheel Co., Waltham, Mass., has taken out a permit for the erection of a small addition to its plant, of fireproof construction.

The Orange Iron Works, Orange, Tex., have purchased additional property at that place upon which to erect a large warehouse.

The new department of the American Sintering Co., located at Hubbard, O., is ready for operation, increasing the output of the concern 100 per cent.

The Conneaut Shovel Co., Conneaut, O., has secured an additional plot of several acres adjoining its factory on the east for the location of new buildings. The company was recently reorganized, George M. Brown being made president, and G. W. Benton, general manager, secretary and treasurer. Since that time several additions to the factory have been made and shipping facilities improved. Labor saving machinery has also been installed for the manufacture of shovels intended for use in coal, dirt, ore, shale and sand.

The Savill-Chandler Co., Canton, Ill., recently incorporated, takes over the business formerly conducted under the name of J. M. Savill & Sons, manufacturers of mining cars and supplies, founders and machinists. While definite plans are not yet matured, the company has in mind the increasing of its output by the building of new shops and possibly the removal to a new site.

The Florence & Cripple Creek railroad shops, Canyon City, Colo., which were recently destroyed by fire with a loss of $40,000, will be rebuilt.

The Springfield Foundry Co., Springfield, Mass., is reported as soon to award contracts for enlarging its plant. Two plans are under consideration, one to erect a $100,000 plant on Albany street, the other to erect a $90,000 plant there and another $15,000 building on the site of the one recently burned. S. M. Green, of Springfield, is consulting engineer.

The Colonial Steel Co., Pittsburg, reports that the second basic open-hearth furnace at its plant was placed in operation Oct. 17. This is of 35-ton capacity, and it is the intention of the company to dispose of its output of from 2,000 to 2,500 tons a month largely in the form of steel billets. No. 1 furnace has been in steady operation since Aug. 8.

It is announced that the Erie railroad is soon to commence the construction at its docks in Cleveland of a large new electric power plant to operate the extensive ore unloading machinery. The newest improvements will be installed, and the total cost of the plant will be fully $500,000.

The Chase Rolling Mill Co., Waterbury, Conn., manufacturing sheet and rod brass, has prepared plans for a new power plant.

The Pittsburg Automatic Machine Co. has purchased a tract of ground in Ellwood City, Pa., upon which it will erect a malleable castings plant to employ 100 men.

Part of the structural material and equipment for the steel plant to be erected near the Queen City race track, Newport, Ky., by J. A. Andrews, has been purchased. The main structure will be 700 feet in length, and it is hoped to have the plant in operation some time next summer.

The Buckeye Steel Castings Co., Columbus, O., at its annual meeting arranged for still further increasing its capacity. The main building will be extended 100 feet to the street and another building will be extended 150 feet.

M. L. Bennett, Ripley, Miss., is erecting a machine shop.

The Davidson Foundry Co., East Chicago, has prepared plans for a new office building.

The Nordeen Iron Works, Everett, Wash., has purchased a tract of land on which it will erect a foundry and machine shop, the latter to be largely employed in the construction of engines.

The Hicks Gas Motor Co., Waycross, Ga., is making extensive additions to its plant, including a foundry 40 x 100 feet, and an erecting shop 50 x 100 feet for the manufacture of the Hicks patent tandem gas and gasoline engines, gas producers and gasoline and alcohol motor cars. The company reports that orders now booked will keep it busy for a year.

The National Machinery Co., Los Angeles, Cal., is to erect a machine shop 155 x 280 feet, a foundry 80 x 150 feet, a forge shop 50 x 100 feet, testing rooms, paint rooms, warehouse and shipping department. R. P. Hillman is president.

R. P. Clark and associates, of Galveston, Tex., will soon begin the construction of a dry dock 600 feet long. This will be divided by a gate, making in reality two docks, one 325 feet and one 250 feet long. A pumping station and power house will be located a short distance from the docks, containing centrifugal pumps for draining the dock after vessel is in place. An electric light plant and water system, the latter for fire protection, will be included with the power plant. A machine shop and foundry will also be erected and equipped with the most modern machinery which will include a compressed air plant with a capacity of 750 cubic feet of air. It is estimated that about $400,000 will be expended.

The Hoopeston Horse Nail Co., Hoopeston, Ill., is to install new machinery, doubling its capacity.

The Dreis & Krump Mfg. Co., Chicago, recently incorporated, succeeds to the business of manufacturing steel cornice brakes heretofore conducted as a partnership. With the addition to the plant, which has just been completed, and new equipment, the company hopes to catch up with back orders.

Rockwell Marietta and Clair Stillwagon have purchased a large tract of coal and surface lands in the Ligonier valley, near Ligonier, Pa., and will erect two extensive coke plants. The new works will be operated as the Marietta-Connellsville Coal & Coke Co., with a capitalization of $100,000, application having been recently made for a charter. Mr. Marietta will be president and Mr. Stillwagon secretary and treasurer.

The Michigan Stove Co., Detroit, is soon to begin work on a $125,000 addition to its plant. The main new building will be seven stories high, 64 x 150 feet, and another structure 75 x 150 feet, three stories in height, will be added.

The Allegheny Ore & Iron Co., Oriskany, Va., has begun work on a building 55 x 150 feet, equipped with modern machinery, to be used as an ore washer. James P. Crist has charge of the construction work, and the plant is under the supervision of J. W. Stull, superintendent, and J. W. Burgess, assistant superintendent. About $75,000 will be expended.

The Maryland Rail Co., Cumberland, Md., has leased and will operate the plate and bar mill of the Baltimore & Ohio Railroad Co., adjoining its plant. H. H. Dickey is president of the company.

The new Fort Smith, Ark., company which was recently organized by L. E. Kenney and C. N. Gilbert, has begun the development of coal properties recently purchased from the Seymour Coal Co. The property consists of an open mine and 1,010 acres of land underlaid with coal, and it is the intention of the company to install a plant at the mines having a daily capacity of 200 tons at the start. The company will also make arrangements for the manufacture of briquettes.

Cobb & Drew, operating plants at Plymouth Mass., and Rock Falls, Ill., have found it necessary to build another addition to their latter works. The building will be 50 x 100 feet, and will provide increased manufacturing and warehouse facilities. Machinery for the nut and bolt departments will be required.

The Fort Pitt Malleable Iron Co., Pittsburg, is planning the erection of large additions to its plant at McKees Rocks, Pa., which include a 15-ton open-hearth furnace, an addition to the main foundry and the enlargement of its annealing department.

The Illinois Iron & Bolt Co., Carpentersville, Ill., has increased its capitalization from $280,000 to $1,210,000 for the purpose of making an extension to its works at Carpentersville, and erecting a branch plant in the south.

The Pittsburg Steel Construction Co., Lewis building, Pittsburg, is making extensive additions to its plant at Economy, Pa., practically doubling its capacity. A number of new buildings of steel construction are in course of erection and considerable new equipment is being installed. A 30-ton crane built by the Alliance Machine Co., Alliance, O., is being installed in the new power house.

A new company is shortly to be incorporated for the purpose of establishing a steel casting plant at Alliance, O. The main building of the plant will

be 76 x 254 feet, equipped with a 20-ton open-hearth furnace, traveling cranes, etc. Francis M. McGinty, of Alliance, is at the head of the new concern.

The Fort Pitt Spring & Mfg. Co., with offices in the Farmers' Bank building, Pittsburg, and plant at McKees Rocks, Pa., has awarded the contract for a steel structure 100 x 100 feet to join its present plant.

The Buffalo Forge Co., Buffalo, N. Y., manufacturing engines, pumps, heating and ventilating apparatus, etc., has increased its capital from $1,000,000 to $1,250,000. This increase will be applied to the enlargement of its works at Broadway and Spring streets.

Industrial Notes:—

The Aurora Automatic Machine Co., a subsidiary of the Independent Pneumatic Tool Co., Chicago and New York, at the annual meeting held in Chicago recently declared the regular quarterly dividend of three per cent, and elected the following directors and officers: James B. Brady, New York; W. O. Jacquette, New York City; John P. Hopkins, Chicago; John D. Hurley, Chicago; A. B. Holmes, Chicago; M. S. Rosenwald, Chicago; Simon Florsheim, Chicago; J. J. McCarthy, Chicago, and C. E. Erikson, Aurora, Ill., directors; John P. Hopkins, president; W. O. Jacquette, first vice president; John D. Hurley, second vice president; C. E. Erikson, treasurer, and A. B. Holmes, secretary.

The Jeffrey Mfg. Co., Columbus, O., has established a new Canadian branch office in Montreal at Lagauchetiere and Cote streets.

Stanton Griffith, foundry superintendent for Fairbanks, Morse & Co., and D. H. Foster, formerly of Beloit, Wis., have leased the South Avon street foundry, Rockford, Ill., for a term of four years, and will begin operations Jan. 1. A jobbing business will be conducted and the Griffith molding machine will be manufactured.

H. W. Leavitt, of Urbana, Ill., has sold his interest in the Leavitt foundry to A. S. Mason, of Alexandria, Minn.

The Milinokett Steamship Co., Duluth, recently organized, will operate a freighter now being constructed at the Ecorse yards of the Great Lakes Engineering Co.

The report which recently gained circulation that the Lackawanna Steel Co. was negotiating for the purchase of the Buffalo & Susquehanna Iron Co. is declared by President Rogers, of the latter company, to be entirely without foundation.

The Dayton Pneumatic Tool Co., Dayton, O., at its recent annual meeting elected the following directors: William W. Price, David O. Holbrook, R. E. Condit, G. L. Wagner and F. W. Buchanan. William W. Price was chosen president and treasurer, David O. Holbrook, vice president, and F. W. Buchanan, secretary and general manager. The company's reports show a large increase in orders, with such a growing demand for the Dayton hammer that the output in this line has been increased within the past six months, thus making prompt deliveries possible.

The Boston Tool Co., Cambridge, Mass., recently incorporated, is successor to Louis F. Carlow, and manufactures a full line of machine specialties, besides designing and building special machinery.

The M. Cohen & Son Co., Cleveland, has succeeded to the iron and steel scrap business heretofore carried on by Cohen, Nagusky & Co. Max Cohen and his son, M. A. Cohen, comprise the firm and have purchased the interest of Joseph Nagusky.

Fires:—

The H. W. Caldwell & Sons Co., Chicago, states that the fire of Oct. 15, which caused about $35,000 loss to its plant in that city, left the walls of the building mainly intact; the cupola is unharmed, the blower was not injured and the large crane is in good shape. Arrangements have been made for taking care of the immediate needs in castings, and orders are being filled promptly. The company expects to be molding on its own floor within a few days.

The machine and car shop of the Lake Shore Electric Railway Co., Fremont, O., was destroyed by fire Oct. 16, with a loss of $35,000. The explosion of a hot water heater in a car started the blaze.

A number of men were burned in a fire Oct. 12 at the William Bayley & Sons foundry, Milwaukee, owned by the Nordberg Mfg. Co. The accident occurred while a 60-ton casting was being poured.

Fire destroyed the plant of the American Axe & Tool Co. at East Douglas, Mass., Oct. 16, with a loss of $40,000.

The Grand Rapids Malleable Iron Works, Grand Rapids, Mich., owned by the Chicago Railway Appliance Co., burned recently with a loss of about $100,000.

The sampler and machine shop at Mackay, Wash., leased to MacBeth Bros., has been destroyed by fire, the loss being $75,000.

A mysterious fire at the King's foundry, Coshocton, O., Oct. 7, caused a loss of $1,000.

The Lincoln Iron Works, at Boonton, N. J., were entirely destroyed by fire Oct. 16, with a loss of $15,000. The Boonton Iron & Steel Co.'s plant, near by, was partially burned, the damage being about $25,000.

The old Union Foundry building on University avenue, Rochester, N. Y., caught fire on Oct. 9 and was partially destroyed. The estimated loss is $5,000.

Trade Notes:—

The Bethlehem Steel Co., of South Bethlehem, Pa., has placed an order with the Crocker-Wheeler Co., of Ampere, N. J., for the complete electrical equipment of its new rolling mill, amounting to about 6,000 horsepower in motors. The mills include rail-making machinery, cooling beds, equipped with pull-on and rake-off attachments, the necessary machine tools, etc. The greater part of the motor equipment will consist of Crocker-Wheeler form W rolling mill motors. All sizes of this machine will be represented,—26 horsepower, 50 horsepower, 76 horsepower and 100 horsepower. There will also be a number of the special open three-bearing generator type of Crocker-Wheeler motors giving outputs of 115 horsepower to 225 horsepower. The celebrated form I machine tool motor will be used in various sizes as well as several of the Crocker-Wheeler crane motors.

The Fox Machine Co., Grand Rapids, Mich., reports that recently the run of orders which it has been receiving has been far in excess of its normal capacity, particularly in regard to the Fox light milling machines. A night crew has been installed and the plant is operating 22 hours per day, but at that is not catching up with its orders.

The Green Fuel Economizer Co., Matteawan, N. J., is building two induced draft fans of exceptional dimensions for the power station of the East St. Louis & Suburban Railway Co. The wheels measure 19 feet, 6 inches in diameter and 7 feet in width at the tips of the blades. They are carried upon 10-inch steel shafts.

The Yale & Towne Mfg. Co., New York, has recently gotten out what it styles "Sugestions for Selling Yale Padlocks," a series of aids for the dealer, which is meeting with the favorable comment it merits. For originality of design, completeness with which the subject is treated and superiority of typographical work, the literature is unusually good. It consists of a "Book about Padlocks," naming and illustrating some 52 varieties of uses; "A Little Black Box," an interesting story with a moral to the prospective purchaser, and a lot of leaflets which are quite out of the ordinary. The series is the work of C. S. Redfield, advertising manager.